DEFENSE INDUSTRY BULLETIN

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Vietnam Crisis

". . . we are in Vietnam to fulfill one of the most solemn pledges of the American Nation. . . .

"I have asked the commanding general—General Westmoreland—what he needs to meet mounting aggression. He has told me. And we will meet his needs. . . .

"I have today ordered to Vietnam the Air Mobile Division, and certain other forces which will raise our fighting strength from 75,000 to 125,000 men almost immediately. Additional forces will be needed later, and they will be sent as requested. . . .

"These steps, like our other actions in the past, are carefully measured to do what must be done to bring an end to aggression and a peaceful settlement."

The foregoing is quoted from President Johnson's statement at the White House news conference held on July 28. Excerpts from the statement of the Secretary of Defense to the Senate Appropriations Committee requesting an increase in funds to implement the President's Vietnam buildup appear on page 1.

DEFENSE INDUSTRY
BULLETIN

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Hon. Robert S. McNamara
Secretary of Defense
Hon. Cyrus R. Vance
Deputy Secretary of Defense
Hon. Arthur Sylvester
Assistant Secretary of Defense
(Public Affairs)
Col. J. B. Cross, USAF
Director for Community Relations
Col. Edwin C. Gibson, USA
Chief, Business & Labor Division
Lt. Col. Sheldon Hicks, USA
Chief, Business Branch and
Editor-in-Chief

Editor........LCdr. E. W. Bradford, USN
Assoc. Editor..........Miss Cecilia Pollok
Assoc. Editor............Mr. Rick La Falce
Edtiorial Assistant
Norman E. Worra, JO1, USN

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The purpose of the *BULLETIN* is to serve as a means of communication between the Department of Defense (DOD) and its authorized agencies and defense contractors and other business interests. It will serve as a guide to industry concerning official policies, programs and projects, and will seek to stimulate thought by members of the defense-industry team in solving the problems that may arise in fulfilling the requirements of the DOD.

Material in the *BULLETIN* is selected to supply pertinent unclassified data of interest to the business community. Suggestions from industry representatives for topics to be covered in future issues should be forwarded to the Business & Labor Division.

The *BULLETIN* is distributed each month to the agencies of Department of Defense, Army, Navy, and Air Force, and to representatives of industry. Request for copies should be addressed to the Business & Labor Division, OASD/PA, Room 2E813, The Pentagon, Washington, D.C. 20301, telephone, OXford 5–2709.

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Industrial Security Management Course Open to Industry

Representatives of industrial and research organizations have been invited by the Department of Defense to attend an Industrial Security Management Course to be held at the Army Intelligence School, Fort Holabird, Baltimore, Md.

Purpose of the five-day course, which will be given in five sessions, is to achieve a common level of understanding, interpretation and application of DOD regulations and directives among security personnel of industry.

Organizations interested in obtaining quotas for the course should contact their cognizant security office and submit the names, addresses. levels of security clearance of prospective representatives and preferred dates of attendance.

The course is open to security officials of industry who are responsible for safeguarding classified information in the custody of contractors of DOD or other user agencies. Persons attending the course are required to have a current security clearance of Confidential or higher. Company confidential clearance is acceptable.

Dates for the five sessions have been set as follows: Sept. 26–Oct. 1; Nov. 14–19; Dec. 12–17; Feb. 27–March 4 and March 27–April 1.

The course is offered without charge. However, transportation and living expenses incurred while attending the course must be paid by the representatives.

Among the subjects to be covered during the 38 hours of instruction are basic principles of industrial security, access authorization actions, security requirements and vulnerabilities and control.

New Program for Obtaining Blueprints Announced by AFLC

The Air Force Logistics Command, working in cooperation with the Air Force Systems Command, has designed a new way of obtaining blueprints and engineering drawings needed for the modification and repair of Air Force weapons systems.

The program is proving so successful that it will be adopted for all aircraft entering the Air Force inventory.

Under the new system, the contractor maintains the drawings and furnishes them to Air Force users upon request. An established system of priorities will speed needed documents to the user in less than a day under emergency conditions. Urgent requests can be filled in three days while routine requirements may take up to 30 days.

The new system, referred to as "Supply of Essential Engineering Data" (SEED), is being service-tested on the Lockheed-built C–141 Starlifter transport now in production. Under the SEED method, up-to-date drawings can be quickly obtained when required from the Lockheed Aircraft Corporation, prime contractor on the Starlifter. Lockheed maintains the drawings and keeps them current in the company's own depository.

The new system has drastically reduced costs of buying such data on the C–141. Under this system there will never be any doubt as to the currency of the drawings, since the contractor must keep them up to date for manufacturing purposes.

The new method of obtaining needed engineering data also applies to the ground support equipment peculiar to a certain aircraft and it can be used for communication and warning systems as well as aerospace weapon systems.

Vietnam Buildup

Secretary of Defense McNamara Explains Requirements to Congress

Secretary of Defense
Robert S. McNamara

Excerpts from statement of Secretary of Defense Robert S. McNamara before the Subcommittee on Department of Defense Appropriations of the Senate Committee on Appropriations.

* * * * * * * *

Role of U.S. Combat Forces in South Vietnam.

The central reserve of the South Vietnamese Army has been seriously depleted in recent months. The principal role of U.S. ground combat forces will be to supplement this reserve in support of the front line forces of the South Vietnamese Army. The indigenous paramilitary forces will deal with the pacification of areas cleared of organized Viet Cong and North Vietnamese units, a role more appropriate for them than for our forces.

The government of South Vietnam's strategy, with which we concur, is to achieve the initiative, to expand gradually its area of control by breaking up major concentrations of enemy forces, using to the maximum our preponderance of air power, both land and sea-based. The number of "fixed-wing" attack sorties by U.S. aircraft in South Vietnam will increase many fold by the end of the year. Armed helicopter sorties will also increase dramatically over the same period, and extensive use will be made of heavy artillery, both land-based and sea-based. At the same time our Air and Naval forces will continue to interdict the Viet Cong supply lines from North Vietnam, both land and sea.

Although our tactics have changed, our objective remains the same. We have no desire to widen the war. We have no desire to overthrow the North Vietnamese regime, seize its territory or achieve the unification of North and South Vietnam or for special privileges of any kind. What we are seeking through the planned military buildup is to block the Viet Cong offensive, to give the people of South Vietnam and their armed forces some relief from the unrelenting Communist pressures—to give them time to strengthen their government, to re-establish law and order, and to revive their economic life which has been seriously disrupted by Viet Cong harassment and attack in recent months. We have no illusions that success will be achieved quickly, but we are confident that it will be achieved much more surely by the plan I have outlined. . . .

Further Increases in the Force Structure and Militar) Personnel.

To offset the deployments now planned to Southeast Asia, and provide some additional forces for possible new deployments, we propose to increase the presently authorized force levels. These increases will be of three types: (1) additional units for the active forces, over and above those reflected in the January Budget; (2) military personnel augmentations for presently authorized units in the active forces to man new bases, to handle the larger logistics workload, etc.; and (3) additional personnel and extra training for selected reserve component units to increase their readiness for quick deployment. We believe we can achieve this buildup without calling up the reserves or ordering the involuntary extension of tours, except as already authorized by law for the Department of the Navy. Even here the extension of officer tours will be on a selective basis and extensions for enlisted men will be limited, in general, to not more than four months. . . .

Increase in Army Forces.

For the Army, we plan to activate one division force, three brigade forces, a large number of helicopter companies, and their combat service support units. In addition, we plan to replace the military personnel drawn from the Strategic Army Forces to provide logistic support in Vietnam. The buildup of these forces will require a substantial expansion of the Army training establishment. The larger deployments to South Vietnam and the increase in Army military personnel generally will result in a higher number of men in transit and other support activities. A military personnel strength increase in the Army of 235,000 is provided for these purposes.

Augmentation of the three Marine Corps Division/Aircraft Wings.

Some 30,000 additional military personnel have been provided for the Marine Corps to augment existing units and to activate certain new units, such as helicopter squadrons, and communication, engineer and military police battalions, and to provide for the increased training and manpower pipeline requirements.

Strengthening the Naval Forces.

The increased tempo of attack carrier operations and the intensified costal patrol of Vietnam will require a small increase in the number of active ships in the Navy as well as an increase in the manning of the ships deployed to that area. These ships are required to operate at close to wartime tempos and, therefore, require higher manning levels than normally provided other fleet units. Furthermore, additional Navy personnel are needed to operate the new ports now being built in South Vietnam and to support the heavier logistics load at other bases. Other support activities, including pipeline, account for the balance of 35,000 additional personnel provided for the Navy.

Augmentation of the Air Force Strike and Airlift Capabilities.

In addition to the increased number of tactical attack sorties, we are also planning more B-52 sorties from Guam. To support the B-52 aircraft to be utilized for this mission, additional personnel will be needed at Guam, to handle ammunition, increased maintenance, and so forth. Support of the additional tactical fighter and troop carrier squadrons deployed to Southeast Asia will require more men.

With greatly increased flow of traffic to South Vietnam, a further early increase in our airlift capability is indicated. We plan to approximately double our existing capability for sustained operations through higher rates of utilization of present airlift aircraft. The more modern MATS aircraft, which now have a planned utilization rate of five hours per day, will be raised and held at eight hours per day. The C–130E troop carrier aircraft in Taction. If we are to fulfill these plans, we must replace what tical Air Command and in the Pacific, which now have a planned operating rate of one and one-half hours per day, will be raised and held at five hours per day. More personnel will be needed.

The increase in the number of Air Force military personnel will require an expansion of the training establishment, which together with other support activities, principally the logistics base, will require a total increase in the Air Force end FY 1966 military personnel strength of 40,000.

In total, 340,000 military personnel will be added to the active forces. To provide this additional strength, the current draft call rate of about 17,000 per month will be approximately doubled.

Increased Readiness for the Reserve Components.

As I noted earlier, we must be prepared to deploy additional forces to Southeast Asia over and above those now planned. Furthermore, we must also be prepared to deal with the crises elsewhere in the world. Accordingly, steps should be taken now to raise still further the readiness of selected reserve component forces so that they could be quickly deployed if the need should arise.

There are a number of steps which could be taken towards this end. The units could be manned at full strength, the number and duration of the paid drills could be increased, additional tours of active duty for training could be provided, the equipment required for movement could be identified and earmarked, etc. . . .

Other Military Personnel and Operation and Maintenance Costs.

Over and beyond the costs of the additional military personnel, there will also be increased costs for the operation of installations and facilities in Southeast Asia: the increases in flying and steaming hours; the consumption of spares and repair parts; and the transportation of supplies and equipment to Southeast Asia. An increase of almost 36,000 "direct hire" civilian employees, raising the total at end FY 1966 to just short of one million, will also be required.

None of these personnel and operation and maintenance costs can be estimated with any degree of precision at the present time. We have yet to work out detailed personnel plans and to calculate, on a phased basis, the increases in activity rates, movements of troops and materiel and other operation and maintenance costs associated with the buildup in Southeast Asia. However, by the time we appear here next January with the FY 1967 budget estimates, we will have completed this work and we will have a much more precise estimate of all of these additional costs and our financial requirements for the balance of FY 1966.

Procurement and Construction.

As in the case of personnel and operation and maintenance costs, we have not as yet had sufficient time to develop detailed requirements and production and construction plans for the additional materiel and facilities needed for the support of the expanding operations in Southeast Asia. And again, we will be in a much better position next January to provide these details and to state our additional requirements for the balance of FY 1966. The $1.7 billion amendment to the Bill now before the Committee which we are proposing at this time will provide the additional financing needed through January to gear up the production machine—to accelerate the delivery of essential items already in production and to initiate the production of new items required for the support of our forces in Southeast Asia, as well as the construction of the most urgently needed facilities. . . .

As you know, we have planned in our FY 1966 and prior year budgets a substantial buildup of war consumable stocks, particularly modern ordnance and ammunition. If we are to fulfill these plans, we must replace what we are drawing from these stocks for consumption in Southeast Asia. Furthermore, we must provide replacements for the aircraft being lost there in combat. And finally, we must buy some additional helicopters for the new Army and Marine Corps aviation units which we now plan to activate.

The higher activity rates planned for our forces in Southeast Asia will increase considerably the consumption of spares and repair parts for many types of equipment. Stocks of these items must be restored through increased production. We will also need to replace in our inventories the additional quantities of equipment for the new bases being established or expanded in Southeast Asia. Funds for these purposes are included in the $1.7 billion supplemental.

Finally, the increased deployments of U.S. forces to Southeast Asia will require an extensive program of construction in South Vietnam and along the lines of communication back to the United States. Included in this program are airfields, ports and troop support and logistics facilities.

Summary

Last Wednesday in his statement on Vietnam, President Johnson said, "I have asked the Commanding General, General Westmoreland, what he needs to meet this mounting aggression. He has told me. We will meet his needs."

The program I have outlined here today and the $1.7 million amendment to the FY 1966 Defense Appropriation Bill now before the Committee will, in the collective judgment of my principal military and civilian advisors and myself, provide the men, materiel and facilities required to fulfill this pledge, while at the same time maintaining the forces required to meet commitments elsewhere in the world. I earnestly solicit the full support of this Committee and the Congress for this program and budget request.

A flight of busy Air Force A–1E Skyraiders wing their way to a target during a recent mission in Vietnam. These "work horse" planes are from the 34th Tactical Group based at Bien Hoa.

Contract Definition

by
J. W. Grodsky, Office of Engineering Management
Office of Director, Defense Research & Engineering

During the past few years, a formal process, called variously Phase I, Program Definition, Project Definition, PDP, and now called Contract Definition, has preceded the initiation of major engineering and operational systems development funded by the Department of Defense. The overall policy for this process was established by DOD Directive 3200.9, "Project Definition Phase," dated Feb. 26, 1964. A revised DOD Directive 3200.9, "Initiation of Engineering and Operational Systems Development," was issued July 1, 1965.

Revision of DOD Directive.

The basic policies regarding application of this process, objectives, prerequisites and procedures are largely unchanged by the revision. The substantive changes in the July 1 revision are:

- A change in the name of the process to "Contract Definition" and use of the name "Concept Formulation" to describe the period (unnamed in the earlier directive but sometimes called "Phase Zero") preceding Contract Definition. The change in name is intended to imply (1) that the definition effort during the Contract Definition phase is only a part of the total definition effort and (2) that the emphasis during this phase is on definition of the development contract.
- The placement of emphasis on initiation of Engineering Development rather than on the initiation of Contract Definition. The DOD wants to assure that Contract Definition is recognized as a consequence of a conditional decision to start Engineering Development and is the first part of Engineering Development. Contract Definition is not an end in itself.
- Clarification and simplification of the procedure for requesting and authorizing initiation of Engineering Development. The revised directive makes clear that, for those projects for which Contract Definition is required, the Secretary of Defense will make the decision to initiate Engineering Development.
- Clarification of the degree of technology advancement allowed during Engineering Development. These policies were originally promulgated in a Dec. 14, 1964, joint memorandum by the Director of Defense Research & Engineering and the Assistant Secretary of Defense (Installations & Logistics) to the Military Departments.
- Establishment of 18 weeks as the objective for the time between submission of Contract Definition reports and firm development proposals and a signed definitive development contract.

Objectives.

The objectives of Concept Formulation and Contract Definition, as stated in the directive, are quoted below:

> A. The objective of Concept Formulation is to provide the technical, economic and military bases for a conditional decision to initiate Engineering Development.
>
> B. The overall objective of Contract Definition is to determine whether the conditional decision to proceed with Engineering Development should be ratified. The ultimate goal of Contract Definition, where Engineering Development is to be performed by a contractor, is achievable performance specifications, backed by a firm fixed price or fully structured incentive proposal for Engineering Development. Included in this overall objective are subsidiary objectives to:
>
> 1. Provide a basis for a firm fixed price or fully structured incentive contract for Engineering Development.
> 2. Establish firm and realistic performance specifications.
> 3. Precisely define interfaces and responsibilities.
> 4. Identify high risk areas.
> 5. Verify technical approaches.
> 6. Establish firm and realistic schedules and cost estimates for Engineering Development (including production engineering, facilities, construction and production hardware that will be funded during Engineering Development because of concurrency considerations).
> 7. Establish schedules and cost estimates for planning purposes for the total project (including production, operation and maintenance).

Intent of Contract Definition.

The following paragraphs are intended to provide a better understanding of the basic intent of Contract Definition and the Concept Formulation period which immediately preceeds it.

The Planning/Definition Process. The total process of planning and defining a major development project takes place over an extended period of time. In a *development* project, it is not practical for all of the detailed planning and definition to take place before a major commitment of resources; however, it is practical for the *basic* planning and definition to be done before full-scale development starts. High confidence should exist, when a major commitment is made, that the project will be successful in terms of operational effectiveness, cost and schedule.

The DOD looks at the planning/definition process as consisting essentially of effort in two time periods. The first, Concept Formulation, is concerned with establishing the concept and accomplishing certain prerequisites to Engineering and Operational Systems Development. The second, Contract Definition, is aimed at refinement of the technical, cost, schedule and management aspects of the project and getting a good contract for the development. A decision is made at the conclusion of Concept Formulation and again at the conclusion of Contract Definition. The first decision, at the end of Concept Formulation, is whether the project should proceed into Engineering Development. An affirmative decision results in a conditional approval for Engineering Development, the first phase of which is Contract Definition. The second decision, at the end of Contract Definition, is expected to be a confirming decision, i.e., a decision to proceed wtih development as planned.

Fulfillment of Prerequisites. Unless sound military, technical, economic and management bases have been established *before* the development starts, there is a low probabaility that the operational, cost and schedule objectives will be achieved. A purpose of DOD Directive 3200.9 and the reviews conducted by the Military Departments and the Office of the Secretary of Defense is to assure that the necessary prerequisite work has been done—that threat and operational analyses, trade-off and cost-effectiveness studies and the development of components and technology have provided a firm foundation for the planned development. In the words of DOD Directive 3200.9:

> Conditional approval to proceed with an Engineering Development will depend on evidence that the Concept Formulation has accomplished the following prerequisites:
>
> 1. Primarily engineering rather than experimental effort is required, and the technology needed is sufficiently in hand.
> 2. The mission and performance envelopes are defined.
> 3. The best technical approaches have been selected.
> 4. A thorough trade-off analysis has been made.
> 5. The cost effectiveness of the proposed item has been determined to be favorable in relationship to the cost effectiveness of competing items on a DOD-wide basis.
> 6. Cost and schedule estimates are creditable and acceptable.

Conditional Approval of Development. A Departmental request for approval to initiate Engineering Development is evidence that the requesting Department considers that the prerequisites have been met, that the item is ready for *development for service* use and that it is *the* item of its type that should be developed. The approval that normally follows this request will be a *conditional* approval for development, not just an approval to start Contract Definition. This is an important point. Contract Definition is not intended to be a means of determining whether the project is ready for Engineering Development. Rather the decision on entry into Engineering Development will be made *before* Contract Definition. This decision will be made by the Secretary of Defense in consultation with his Research & Development, Comptroller, Systems Analysis and Installations & Logistics Assistants. Thus it will take into account not only the R&D aspects of the project but also the downstream aspects. The condition attached to the approval to proceed with Engineering Development is expected to be removed by satisfactory completion of Contract Definition.

The Intent of Contract Definition. This last part of the planning/definition process—Contract Definition—directly follows and is a consequence of the conditional decision to enter the Engineering Development. This process is intended (1) to validate the assumptions on which the conditional decision was made (thus permitting the condition to be removed) and (2) to secure a good contract for the development project.

Nature of the Development Contract. This contract must be definitive, not a letter contract. Further, the development contract must be firm fixed-price, fixed-price incentive or cost-plus-incentive-fee. These kinds of contracts, rather than cost-plus-fixed-fee, are feasible when the prerequisites to engineering development have been met and the development project has been well defined.

Optimization of the End Product. The process of Concept Formulation/Contract Definition is intended to provide assurance that the proposed weapon system or equipment has been optimized from standpoints of total cost, schedule and operational effectiveness. Several factors can contribute to this goal:

- First, adequate and pertinent detailed study and development during Concept Formulation.
- Second, a competitive environment during Contract Definition and the design of good incentives for the development contract. These can provide strong motivation for optimization.
- Third, an environment that stimulates creativity and encourages the examination of alternatives within the framework of the mission and performance envelopes and the best overall technical approach derived during Concept Formulation.
- Fourth, guidance by the Government (principally the Departmental project office), both at the Government's initiative and in response to questions by the contractors.

Indoctrination Program.

The Department of Defense, in cooperation with the National Security Industrial Association, the Aerospace Industries Association and the Electronic Industries Association, is sponsoring a series of indoctrination seminars and workshops on Contract Definition during the period Aug. 17—Oct. 13 of this year. The series will include three kinds of sessions: Top Management Indoctrinations, Middle Management Orientations and Instructor Workshops. The sessions will be small enough to permit discussion among the participants. Although a number of indoctrination sessions will be held at major defense locations throughout the country, the scheduled sessions will probably not accommodate all of those interested in attending. Therefore, the three-day workshops are intended to go into considerable depth and provide a means of training instructors from the Military Departments and industry who can indoctrinate or train additional people from their own organizations. The sessions are described in the following paragraphs.

I. Top Management Indoctrination.

These sessions (approximately three hours each) are intended to provide *indoctrination* only, not-in depth training. The indoctrination will be oriented primarily to Defense Department and industry executives in the decision chain for major development projects. Attendance for each session will be limited to 50 (25 Government and 25 industry). Each session will, in addition to providing a general indoctrination and orientation to those unfamiliar wtih Contract Definition, highlight experience to date with this process and changes in the July 1, 1965, revision of DOD Directive 3200.9. The sessions are planned to consist of about two hours of presentations with interspersed films, followed by one hour of questions and answers as follows:

Film: Dr. Harold Brown, Director of Defense Research & Engineering—The Intent of Contract Definition.
Presentation: Dr. J. Sterling Livingston, Peat Marwick Management Systems Co.
Film: DOD/Industry Panel Discussion.
Films: DOD and Industry Project Managers' Firsthand Experience with Contract Definition.
Answers to Questions from the Floor: Mr. James W. Roach, Office of the Director, Defense Research & Engineering.

II. Middle Management Orientation.

These sessions (approximately three hours each) are intended to provide *indoctrination* only, not in-depth training. The indoctrination will be oriented primarily to the middle management group, including personnel in project management offices. Attendance for each session will be limited to 100 (50 Government and 50 industry). Content of each session will be similar to that of the Top Management Indoctrinations but oriented primarily to the project manager and his immedaite staff. The presentation will be by members of the Peat Marwick Management Systems Company Staff. Questions will be answered by a DOD representative.

III. Instructor Workshops.

These sessions (three days each) will include indoctrination and some training. The purpose of the workshops is to train selected Military Department and industry personnel as instructors qualified to lead future workshop sessions for working-level personnel involved in Contract Definition. Each workshop will be limited to 90 participants. Each session will include the material used in the Middle Management Orientations augmented by case studies. The workshops will be led by members of the Peat Marwick Management Systems Company staff.

Schedule for Indoctrination Program.

Top Management Session No.	*Date*	*Location*
1 & 2	Aug. 17, 1965	Washington, D. C.
3	Aug. 18, 1965	Washington, D. C.
4 & 5	Aug. 20, 1965	Los Angeles, Calif.

Middle Management Session No.		
1 thru 4	Aug. 23–24, 1965	Los Angeles, Calif.
5 & 6	Aug. 26, 1965	Menlo Park, Calif.
7 & 8	Aug. 30, 1965	Washington, D. C.
9, 10, 11	Aug. 31 & Sept. 1, 1965	Washington, D. C.
12 & 13	Sept. 2, 1965	Fort Monmouth, N. J.
14 & 15	Sept. 8, 1965	Boston, Mass.
16 & 17	Sept. 10, 1965	Philadelphia, Pa.
18 & 19	Sept. 13, 1965	Denver, Colo.
20 & 21	Sept. 15, 1965	Dallas, Tex.
22 & 23	Sept. 17, 1965	St. Louis, Mo.
24 & 25	Sept. 20, 1965	Dayton, Ohio
26 & 27	Sept. 22, 1965	Detroit, Mich.
28 & 29	Sept. 24, 1965	Huntsville, Ala.

Instructor Workshop No.		
1	Sept. 27–29, 1965	Washington, D. C.
2	Oct. 4–6, 1965	Los Angeles, Calif.
3	Oct. 11–13, 1965	Washington, D. C.

(*Continued on page 14*)

Management in Army Materiel Command

by

General Frank S. Besson, Jr., U.S.A.

Management in the United States Army Materiel Command (AMC) is largely conditioned by today's environment. Within the span of two decades, the Army, Navy, Air Force and Marines have made tremendous forward strides in organization, tactics, equipment, weapons and mobility. Each Service has adapted itself successfully to great technological developments which, in recent years, have radically changed almost every aspect of war.

Cavalrymen have overcome conviction and sentiment to become exponents of armored warfare. Today's artillerymen are concerned with guided missiles and rockets and the infantryman is adding another chapter to the Army's mobility history as he applies advanced air assault concepts.

As in the tactical and strategic environments, today's Army is also concerned in the logistical area with modern management practices and concepts. Because waste or inefficiency in the employment of money, materiel or manpower is directly reflected in reduced combat power, the newest tools and principles of management are required to insure maximum operational efficiency.

The logistical management task in AMC is one of administering a huge, complex administrative and service apparatus—one meshed with a huge civilian industrial complex — all aimed at supporting the fighting soldier with the best weapons and equipment that American ingenuity can devise.

This task has always posed difficult challenges to the military logistics manager, but the current environment has broadened the scope of these challenges considerably. We are faced with a dynamic technology—one which has dramatically changed in the last 30 to 40 years. Everything moves faster—particularly in the military domain. The tools of today are not adequate for tomorrow's tasks.

One of the forcing elements in obsoleting the management practices of this modern age is "time-shorted" travel or shrinking geography. One can travel from coast to coast today in a matter of three to four hours. The result is little decentralization of broad delegations of authority, and ignorance of what is happening with the delegated authority for weeks and months. Eyeball to eyeball confrontation is the order of the day for all management reviews and decisions.

Top level decision making is also facilitated by improved communications — telephones, teletypewriters and Automatic Data Processing (ADP) equipment—which permit instantaneous access to almost unlimited data. ADP equipment provides an opportunity for all individuals in the organization to look at the same information at the same time. In the optimum condition, the information that top management receives is distilled from the same fragments of information used at the lower echelons. Information is cast in the same time frame, which for all practical purposes is immediate or real.

General Frank S. Besson Jr., USA
Commanding General
U. S. Army Materiel Command

As a result of improved transportation and communications techniques, important decision making gravitates to the top. This is a trend which is not only common in the military but is one which is found in industry too. With improved communication, and with the ability to obtain real-time information by ADP, more and more top managers make the important decisions. Decisions are made at the top and the implementation of those decisions is then decentralized.

At the mid-management level—the level at which the Army Materiel Command operates—what is the response to this situation, where broad delegations of operating authority are decentralized, but where important decision making is reserved to the highest echelons?

From the initial establishment of AMC, it was obvious that it was necessary to know who was to give orders, and who was to take orders. My primary responsibility was to fix responsibility.

Additionally, an honest effort was made to encourage initiative in subordinates by decentralizing authority. In this effort more authority was given to the Project Managers, for example, in managing AMC's most important projects than anyone dreamed possible—perhaps more than was intended initially—but the favorable results so far have more than justified the action.

A recent statement by General Harold K. Johnson, the Army Chief of Staff, to the effect that until an individual has been proved wrong he should be trusted, is the key to AMC's policy in delegating authority. Line authority is accentuated and staff authority is concentrated on programming, scheduling and after action review rather than on defensive type, time-consuming approval of individual stepping-stone actions. Subordinates are trusted and capable personnel are "stretched out" by demanding assignments.

Our attitude is designed to encourage a sense of urgency and it was never more necessary than now. We look for bold action and encourage visibility. Individuals with responsibility are to be visible to everyone; and I want each to know that, in carrying out his duties, he is free to communicate with anyone, horizontally and vertically, both within and without AMC. In short, I want everyone who does business with AMC to know that AMC Commodity and Project Managers are actually *responsible* for their projects.

In essence, we are attempting to manage by exception. This is not as difficult as it would first appear, since everyone from the top echelon down, given today's dynamic technology, has a pretty fair grasp of progress—or more importantly—lack thereof.

Speaking of the top echelons, the Commanding General of AMC reports directly to the Army Chief of Staff. He also receives broad policy guidance from the Assistant Secretary of the Army for Installations and Logistics on procurement and from the Assistant Secretary of the Army for Research and Development on research and development programs. The Deputy Chief of Staff for Logistics supervises AMC's Procurement of Equipment and Missiles, Army (PEMA), Army Stock Fund (ASF) and Operations and Maintenance, Army (O&MA) funds; the Assistant Chief of Staff for Force Development and the Chief of Research and Development also supervise AMC operations in their particular areas of responsibility. Resources—money and manpower—come from the Comptroller of the Army and the Deputy Chief of Staff for Personnel. It is AMC's management task to take all of the policy guidance, direction and resources, and meet the Army's materiel requirements.

On any measurement scale, AMC's task is a huge one. It is responsible for annual expenditures of about $9 billion. In addition, AMC supports an inventory of weapons and equipment estimated to be worth $21 billion, of which about half is in the hands of troops. Currently, 169,362 personnel—of which 18,000 are military—are employed by AMC. This current strength represents an overall reduction of approximately 20,000 people since AMC began operations in August 1962.

Installation cutbacks and consolidations show a similar reduction—from a peak of 278 local and regional installations and activities in August 1962 to 205 at the present time.

Although there have been a number of internal reorganizations and restructuring since 1962, AMC's major command structure consists of seven major subordinate commands responsible for providing the weapons and equipment required by the Army to move, shoot, see and communicate.

Movement is handled by the Mobility Command in Warren, Mich., with three commodity centers: the Army Tank-Automotive Center in Warren, Mich.; the Aviation Materiel Command, St. Louis, Mo.; and the Mobility Equipment Center, also in St. Louis. Shooting is a function of three commands—the Weapons Command at Rock Island, Ill.; the Munitions Command at Picatinny Arsenal, N. J.; and the Missile Command at Huntsville, Ala.

Communications is primarily the responsibility of the Electronics Command at Fort Monmouth, N. J. Seeing—battlefield surveillance—is a shared responsibility of both the Mobility and Electronics Commands.

This commodity-oriented concept has also brought into being the vertical Project Management concept. Since many modern weapons programs can and do call for the expenditure of hundreds of millions and even several billions of dollars, and consume from five to 10 years in the life cycle, they are, in effect, established as separate "profit centers" within the corporate body of the Defense Department.

Within AMC we have 41 such organizations at the present time for programs of high criticality because of cost, military significance or other emphasis. Basically the Project Manager is an authoritative manager, completely oriented towards a specific piece of hardware. From an information or data processing point of view, it amounts to the establishment of a separate ledger account for all transactions related to the particular system.

Project Managers in AMC manage their projects, operating within the total money and other resources given them. They direct 48% of AMC's research and development expenditures, and nearly 55% of its production expenditures. Thus, they may exert their influence upon an item throughout development and procurement. Although there are some exceptions, Project Managers generally have entered the picture by the time the development stage is reached, and then follow the item through successful procurement and fielding of the system.

In managing, when it is possible to obtain data in quantity, and have the elements of this data all the same but packaged in various ways, it behooves the manager to look over his operations in different ways. Generally speaking, AMC's operations can be divided into three major management categories: command management, program management and what might be called qualitative control of management practices.

Command management is exercised through the commodity commands and the 41 Project Managers. Program management at the AMC level is functionally oriented toward research, development, procurement, supply and maintenance. This is the way the Army staff is organized and hence AMC is not in a position to stratify its management along the force structure lines identified in the DOD "Force Structure and Financial Plan."

From a qualitative control standpoint, the activities of AMC are observed from almost every angle. AMC renders 489 recurring reports, which are widely distributed and cover almost every segment of our operation. Cost Reduction, Small Business, Quality Control, General Accounting Office Reports, Equal Employment Opportunities, Distressed Area Set-Asides, Obligation Rates, Plant Utilization, Technical Data Standardization, Maintenance Standards and Work Measurement are but a few of the myriads of qualitative programs which are "stove piped" into AMC to accelerate management improvement.

I have no quarrel with these managerial assists. To the contrary, I find they are of extreme value in helping my staff and to continually improve our operations. All of these independent spotlights on separate facets certainly facilitate management by exception, because errors and downward trends are quickly highlighted.

As in all our efforts, management objectives are designed to further the AMC mission—to efficiently, economically and effectively provide the soldier in the field what he needs to do his job, whenever and wherever it is required. In this effort, AMC is continuing to seek maximum cooperation of industry in keeping the Army informed as to industry capabilities, problems and achievements as they affect the military. In turn, AMC is exploring new techniques to provide industry with even greater understanding and appreciation of the many factors involved in developing and providing the necessary materiel support to the user. AMC is convinced that this mutual cooperation is the keystone to maintaining an adequate national defense.

DEPARTMENT OF DEFENSE

Mr. Robert N. Anthony, 48, has been named to take over the post of Assistant Secretary of Defense (Comptroller), relieving Charles J. Hitch. Mr. Anthony's primary responsibility in the new job will be preparation and administration of the annual Defense Department Budget. For the past year, Mr. Anthony has served as consultant to the Assistant Secretary of the Navy for Financial Management. He is a professor of Business Administration and a member of the faculty of the Harvard University School of Business.

Mr. Alain C. Enthoven, 35, who is presently serving as Deputy Assistant Secretary of Defense (Systems Analysis), will remain in this post when it is upgraded to the status of Assistant Secretary of Defense (Systems Analysis). With the promotion, Mr. Enthoven will take on part of the functions now performed by the Assistant Secretary of Defense (Comptroller). Prior to Mr. Enthoven's appointment to his present job in October 1962, he was an economist with the Rand Corporation.

Dr. Richard D. Holbrook, Vice President, Defense Research Corp., Santa Monica, Calif., has been appointed Dir., Advanced Research Projects Agency Research & Development Field Unit, Thailand. He succeeds Col. Thomas Brundage, USMC (Ret.)

Dr. N. F. Wikner, nuclear physicist with General Dynamics Corp., has been appointed Scientific Assistant to the Dep. Dir., Scientific, of the Defense Atomic Support Agency (DASA); **Mr. Peter H. Haas** has been named Dep. Chief of DASA's Radiation Div.

ABOUT PEOPLE

Brig. Gen. Russell E. Dougherty, USAF, has been assigned as Dir. European Region, in the Office of the Asst. Secretary of Defense (International Security Affairs).

ARMY

Mr. Stanley R. Resor, 47, was sworn in as Secretary of the Army on July 7 relieving Stephen Ailes, who resigned from the position on July 1. The new secretary served as Under Secretary of the Army from April 5, 1965 until July 1, when he was designated as Acting Secretary of the Army. On July 7, his appointment as head civilian in the Army Department became permanent. Mr. Resor is a native of New York City and is an attorney.

Mr. David E. McGiffert, 39, has been appointed to the position of Under Secretary of the Army. He relieves Mr. Stanley R. Resor who became Secretary of the Army July 7. Official date for the assignment has not been set. Mr. McGiffert is now serving as Assistant Secretary of Defense (Legislative Affairs). Prior to joining Government service, he was associated with the Washington, D.C. firm of Covington and Burling. He served in the Navy from 1944-46 as an electronics technician.

Lt. Gen James L. Richardson, Jr., who has been Dep. Chief of Staff for Personnel, has been named Commanding General, Sixth U.S. Army. He succeeds **Lt. Gen. Frederic J. Brown**, who will become Chairman, Army Logistics System Study Group, Office of the Chief of Staff, U.S. Army.

Lt. Gen. James K. Woolnough, Dep. Commander in Chief and Chief of Staff, U.S. Army, Pacific, succeeds Gen. Richardson as Dep. Chief of Staff for Personnel.

Succeeding Gen. Woolnough as the Dep. Commander in Chief and Chief of Staff, U.S. Army, Pacific, is **Lt. Gen. Edgar C. Doleman**, formerly Commanding General, I Corps (Group), Korea.

Maj. Gen. John M. Cone, formerly Dir. of Quality Assurance, Hq, Army Materiel Command, assumed command of the White Sands Missile Range on Aug. 1. He succeeds **Maj. Gen. J. Frederick Thorlin**, who has retired.

The following staff assignments have been made in the Office of Chief of Research & Development: **Col. Charles M. Young, Jr.**, Chief, Combat Materiel Div., Developments Directorate; **Lt. Col. Howard H. Cooksey**, Executive Officer to Chief of Research & Development.

Lt. Col. Raymond I. McFadden has been named Project Manager of Overseer (MQM-58A), succeeding Col. Daniel P. Gallagher who has retired.

Lt. Col. John H. Boyes has been named Project Manager for the Medium Assault Anti-tank Weapon (MAW), which is under the control of the Army Missile Command, Huntsville, Ala.

NAVY

Mr. Robert H. B. Baldwin, 45, a former Naval officer, assumed the duties of Under Secretary of the Navy July 1, 1965. He relieved Kenneth E. BeLieu, who resigned from the job. Prior to his designation as Under Secretary of the Navy, Mr. Baldwin served as a Special Consultant to the Secretary and Under Secretary of the Navy. Before accepting his position with the Navy Department, Mr. Baldwin was with the investment firm of Morgan Stanley & Company, serving as a general partner since 1958.

Adm. David L. McDonald, Chief of Naval Operations, has been appointed for a second two-year term as Chief of Naval Operations.

VAdm. Ray C. Needham has been designated Inspector General, Dept. of the Navy. Prior to this assignment he was Dep. Commander in Chief, Atlantic Fleet.

RAdm. Stephen Sherwood, SC, is the new Dep. Chief, Bureau of Supplies & Accounts. His previous assignment was Commander, Naval Supply Center, Pearl Harbor.

RAdm. Daniel F. Smith, Jr., Chief of the Naval Basic Training Command, Naval Air Station, Pensacola, Fla., has become Commander, Naval Test Center, Patuxent River, Md.

Capt. **James W. McConnaughay** has been reassigned from duty as Commanding Officer, Naval Air Test Facility (Ship Installations), Lakehurst, N.J., to the Bureau of Naval Weapons as Programs and Laboratories Officer. Succeeding him as Commanding Officer of the Lakehurst test facility is **Capt. James C. Lieber.**

Capt. **H. D. Allen** is the new Dep. Commander, Naval Weapons Laboratory, Dahlgren, Va. He relieves **Capt. George G. Ball**, who will attend the Industrial College of the Armed Forces.

Capt. **James R. Payne**, formerly Missile Development Officer, Bureau of Naval Weapons, has become Commanding Officer, Naval Weapons Station, Yorktown, Va. **Capt. Ben B. Pickett**, former commander, has been selected for the rank of rear admiral and has assumed command of the Cruiser-Destroyer Flotilla Twelve.

New Supply Corps assignments: **Capt. N. J. Cummings**, SC, Special Asst. to Dir., Procurement Div., Office of Naval Material; **Capt. J. E. Harvey, Jr.**, SC, Asst. Chief for Purchasing, Bureau of Supplies & Accounts; **Capt., L. G. Maxwell**, SC, Officer-in-Charge, Navy Purchasing Office, New York, N.Y.; **Cdr. J. L. Forehand**, SC, Dir. Purchasing Div., Navy Electronics Supply Office, Great Lakes, Ill.

AIR FORCE

Maj. Gen. Glen W. Martin has been nominated for promotion to lieutenant general and assignment as The Inspector General, USAF. **Lt. Gen. William K. Martin**, presently The Inspector General, is being reassigned as Commander, Fifteenth Air Force, SAC, effective Sept. 1. General Martin will replace **Lt. General Archie J. Old, Jr.**, who will retire Aug. 31.

Maj. Gen. J. Francis Taylor Jr., formerly Dir., Command Control & Communications, Hq., USAF, has assumed command of the Air Force Communications Service, Scott AFB, Ill.

Brig. Gen. Guy H. Goddard has been assigned as Dep. Dir. for Construction, Hq., USAF; **Brig. Gen. Oran O. Price**, has been assigned as Civil Engineer, Air Force Logistics Command, Wright-Patterson AFB, Ohio.

Dr. Harold Brown, 37, Director of Defense Research & Engineering since 1961, has been designated by President Johnson as the new **Secretary of the Air Force**. He will relieve Eugene M. Zuckert, who announced his resignation last month, on Sept. 30. Dr. Brown has been directly associated with the Defense Department since 1956. During 1956-1961 he served in an advisory capacity as a member of the Polaris Steering Committee, the Air Force Scientific Advisory Board and the Scientific Advisory Committee on Ballistic Missiles.

Mr. Norman S. Paul, 46, will relieve Dr. Brockway McMillan as **Under Secretary of the Air Force** on Sept. 30. From 1955 to 1960, Mr. Paul was with the Central Intelligence Agency. In 1961 he was appointed assistant to the Secretary of Defense for Legislative Affairs and in July 1962 he was appointed to his present position as Assistant Secreary of Defense for Manpower. Mr. Paul is a former Naval officer and is a 1940 graduate of Yale University.

The following are new assignments on the Air Staff, Hq., USAF: **Col. William C. Pratt**, Director of Data Automation; **Col. Charles R. Gregg**, Dep. Dir. of Data Automation.

Col. Robert P. Daly has been assigned as Dep. Dir. for Procurement, Air Force Logistics Command, Wright-Patterson AFB, Ohio.

New assignments at Electronics Systems Div., AFSC, Hanscom Field, Mass.: **Col. David W. Pearsall**, Dep. Commander for Advanced Planning; **Col. Bryce S. Moore**, Chief, Procurement & Production Office.

New Director of Small Business Liaison Staff Appointed

The Small Business Administration has announced the appointment of Mr. Ralph F. Turner as Director of the Small Business Government Liaison Staff for all Government agencies, including the Defense Department. Mr. Turner, formerly Assistant Deputy Administrator for Procurement and Management Assistance, succeeds Mr. Ted G. Waale, who is retiring.

Army, Air Force Announce New ROTC Scholarship Program Awards

The Army recently announced the names of 400 high school graduates who have won the first four-year scholarships to be given by the Army to college and University ROTC programs. In July the names of 600 ROTC college students who won two-year Army scholarships starting with their junior year in college this fall were listed. Both the four-year and the two-year scholarships, which are authorized by the ROTC Vitalization Act signed by the President on Oct. 13, 1964, will pay for tuition, textbooks and fees, and provide the recipient with a subsistence allowance of $50 a month for the duration of his award. The scholarship winners will join thousands of other college freshmen entering the ROTC program this fall—a program that provides approximately 85% of the officer input needed by the Army each year. Some 11,800 ROTC graduates from 247 ROTC colleges and universities are being commissioned this year as second lieutenants in the Regular Army or the Army Reserve. The Air Force has announced that 976 ROTC cadets will receive final two-year scholarships with benefits similar to the Army Program. AFROTC is in 185 colleges and provides approximately 4,500 new officers each year.

DOD Pursues Active Program to Assist Small Business and Labor Surplus Areas

The Defense Department is actively seeking to increase the participation of small business and labor surplus area firms through an aggressive program conducted by the Directorate for Small Business and Economic Utilization Policy. This office is under the direction of Albert C. Lazure, former General Counsel for the Ordnance Corps, and a lawyer with more than 25 years of military procurement experience.

Located under Deputy Assistant Secretary for Procurement, John M. Malloy, in the Office of the Assistant Secretary of Defense (Installations & Logistics), Paul R. Ignatius, the Directorate has developed a six-point program to implement the small business and labor surplus area policies contained in the Armed Services Procurement Regulation (ASPR). The provisions of ASPR incorporate the national policies expressed in the Armed Services Act of 1947, the Small Business Act of 1958, Defense Manpower Policy #4 as issued by Office of Engineering Planning and current DOD appropriation acts.

Fundamentally, it is the intent of the Congress and the Executive that a fair proportion of the total purchases and contracts for supplies and services for the Government shall be placed with small business concerns and that encouragement shall be given to the placing of contracts and facilities in areas of persistent or substantial labor surplus and to assist such areas in making the best use of their available resources.

The DOD (Installation & Logistics) Secretariat, through its Small Business and Economic Utilization Policy Directorate, transmits operating and policy guidance to the more than 600 full and part-time Small Business and Labor Surplus Specialists at military procurement offices throughout the country. Ths is done through the ASPR and through the Small Business/Labor Surplus Area (SB/LSA) advisors to the Assistant Secretaries of the Army, Navy, Air Force and DSA. Jack W. Askins of the Army, Morris M. Questal in the Navy, Thomas H. Casey and Edward J. McMurray of the Air Force, and Julian Ross and C. F. Cinqiegrana of DSA direct small business and labor surplus activities in their particular agencies.

To increase the participation of these firms in the defense market place, a six-point program has been designed to discover and utilize new sources for both prime and subcontracting opportunities, to make maximum use of preference "set-aside" procedures, to publicize defense business opportunities and to join in special projects having social or economic implications for DOD procurement functions.

The program in brief is as follows:

Prime Contractor Source Development and Utilization.

Dovetailing with Defense policies of increasing competition wherever possible, this program seeks out, screens and solicits firms for Invitation for Bid (IFB) and Request for Proposal (RFP) actions. Follow-up is then initiated to insure that interested and qualified firms are maintained on aproppriate bidders' lists and that they are afforded an equitable opportunity to compete on procurements for which they are qualified.

Assistance is offered by the Small Business Administration through its programs for referrals, surveys for certificates of competency and credit and loan programs. The Department of Commerce, through the *Commerce Business Daily*, synopsizes procurement invitations, subcontracting leads, contract awards and other business opportunities.

Activities

Sections 1–700 and 1–800 of ASPR provide for the "partial" or "total" set-aside of certain procurements for small business and labor surplus area concerns. Small business set-asides may be "partial" or "total" (100%), while labor surplus area set-asides may be only "partial." Total set-asides of individual procurements or a class of procurements is authorized if there is reasonable expectation of bids or proposals from a sufficient number of responsible small business concerns so that awards can be made at reasonable prices.

Partial set-asides may be utilized for small business or labor surplus area firms if the proposed "buy" can be divided into segments each constituting an economic production run. The procurement is then divided into a non-set-aside portion open to all bidders and a set-aside portion open only to small business or labor surplus area concerns as the situation may warrant. Firms interested in the set-aside portion must also bid on the non-set-aside portion.

After awards have been made on the non-set-aside portion, negotiations are then conducted for the set-aside portion with the eligible small business or labor surplus area bidders to determine if they will meet the award price of the non-set-aside portion. Negotiations are conducted only with those responsible bidders or offerors who have submitted responsive bids or proposals on the non-set aside portion at a price no greater than 120 per cent of the highest unit price awarded on the non-set-aside portion.

The order of priority for those within the 120 per cent range in the conduct of small business or labor surplus area set-asides negotiations is as follows:

Priority Groups	Small Business Set-Asides	Labor Surplus Set-Asides
1	Small Business concerns which are also persistent labor surplus area concerns.	Persistent labor surplus area concerns which are also small business concerns.
2	Small Business concerns which are also substantial labor surplus area concerns.	Other persistent labor surplus area concerns.
3	Small business concerns which are not labor surplus area concerns.	Substantial labor surplus area concerns which are also small business concerns.
4		Other substantial labor surplus area concerns.
5		Small business concerns which are not labor surplus area concerns.

(*Continued on Page 22*)

Mr. Albert C. Lazure, Director of Small Business and Economic Utilization Policy in the Office of Asst. Secretary of Defense (Installations & Logistics). Mr. Lazure has the responsibility to assure continuing Defense-wide application of policies and practices designed to aid labor surplus areas consistent with procurement objectives and without the payment of price differentials.

The Increase Reliability Operational Systems Program

by
George S. Peratino
Assistant for Reliability Matters
Office of Dep. Chief of Staff (Systems & Logistics)
Headquarters, U.S. Air Force

The Air Force has initiated a program called IROS (Increase Reliability of Operational Systems) in an attempt to reach a higher degree of reliability in equipment and systems already in operational use. The participation of industry across the board will be needed to provide replacement parts and development of improved components as problem systems, subsystems and equipment are identified.

How IROS Evolved.

Initially, the management procedures established to implement reliability policy on systems were applied to systems in the conceptual, definition or acquisition phase. Air Force Regulation 375–5, "Reliability Program for Weapon Support, and Command and Control Systems," dated Oct. 17, 1960, supplied the impetus required to initiate a full scale attack on unreliable systems. This document was the first service regulation to contain reliability policy.

After having attained a satisfactory level of reliability on systems in development and production, attention was focused on those systems in the operational inventory which were developed prior to the issuance of Air Force reliability policy and management procedures and on those systems designed during the late 1950's, many of which will be in use for a long time.

Lieutenant General Thomas P. Gerrity, Deputy Chief of Staff, Systems & Logistics, Headquarters, USAF, concerned about this problem, directed the establishment of a program to increase the reliability of systems in the operational inventory. Responsibility was delegated to the Office of the Director for Procurement Policy.

An Air Force team, under the direction of the Air Staff focal point for reliability matters, was established to undertake the assignment. The team included representatives from Headquarters, Air Force Systems Command (AFSC); Headquarters, Air Force Logistics Command (AFLC); and the Directorates of Maintenance Engineering and Procurement Policy, Headquarters, USAF.

The program, designated IROS, became official on March 18, 1965, when Air Force Regulation 400–46, outlining the program, was issued.

Program Objective.

Through failure data and mathematical models, IROS will identify problem areas existing in current systems, subsystems and equipment. It will test these "weak links" to determine the interrelationship of environment, test equipment, technical orders, design and maintenance skill level.

Where cost effectiveness considerations justify, component improvement programs will be instituted.

Since the objective of the IROS program is to increase reliability of operational systems, Air Force activities are required to:

- Apply necessary resources to review and analyze the current reliability of operational systems.
- Analyze electric data processing printouts to identify areas suspected of having low reliability.
- Recommend corrective actions to increase operational reliability of Air Force systems.

Command Responsibilities.

AFLC will play the major role in the IROS program since the command has engineering responsibility for systems in the operational inventory. The IROS program at AFLC is under the direction of the reliability manager, Mr. Frank J. Ruther.

AFLC management procedure at the Air Materiel Area level will include monthly reliability status reports prepared for each system. The reports will contain hardware reliability trends for each operational system over a period of six months. Additional graphical trend data will be included to portray "alert availability," "unscheduled maintenance analysis," "before flight" and "flight hardware reliability," and "objective reliability."

The report will include a detailed diagram showing the mean time between failure (MTBF) for each system and the major subsystems which have a low MTBF. The block diagram will be expanded in these areas only to pinpoint the equipment whose MTBF is low.

Headquarters, USAF, and Headquarters, AFLC, will review the system block diagrams with representatives of the cognizant operating commands to direct further effort by the AMA's in pinpointing specific items that are highly unreliable. When the items are uncovered, the AMA will determine whether substitute parts with higher reliability are available for substitution into existing equipment. When items are not available, programs must be initiated to develop highly reliable parts for substitution into Air Force equipment. In each case, cost effectiveness studies will be initiated to determine the feasibility of changing the design.

Factors to be considered in making the determination are:

- Cost of replacing the unreliable items.
- Cost of modification.
- Cost of development programs to obtain highly reliable substitute items.
- Projected life of the system in the operational inventory.
- Reduction of the logistics support cost during the remaining life of the system.

No modification program will be undertaken unless savings result to the Air Force or the tactical capabilities of the system are increased enough to assure performance of its assigned missions.

When adequate data is not available at the AMA level to decide whether the operational reliability of the equipment is adequate, a suitable testing program will be established to obtain a higher degree of confidence in the operational reliability value.

AFSC will establish those programs necessary to meet the mission requirements of systems for which the command has Air Force engineering responsibility. In addition, AFSC will establish component improvement programs with the systems program to eliminate high-failure-rate and manhour consumer items. It will provide engineering support for the IROS program when requested by AFLC and the operating commands.

Air Force operating commands will develop a summary of the operational and maintenance concept changes for each of their systems. They will establish appropriate analytical models to pinpoint areas of low reliability. In conjunction with AFLC and AFSC they will determine the minimum acceptable reliability level and the desired reliability goal for each operational system. The operating commands will recommend priority of actions based upon mission requirements and current availability of Air Force systems.

Air Force-Industry Cooperation.

An important factor on which the success of the IROS Program will hinge is the support of industrial organizations. Many reliable replacement items are available today for immediate insertion into the operational systems. However, many more will be required. Industry must gear its operations to meet this new challenge. As reliability information on the operational systems becomes available to the Air Force, industry will be advised. Thus industry actions to improve the reliability of their products to meet the program needs can be carried on parallel with Air Force actions to obtain approval and funding to support development of reliable replacement items.

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AUGUST 1965

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OCTOBER 1965

SPEAKERS CALENDAR

OFFICE OF THE SECRETARY OF DEFENSE

Hon. Cyrus R. Vance, Dep. Secretary of Defense, at National Security Industrial Assn. Annual Dinner, Washington, D C., Oct. 7.

ARMY

Gen. Harold K. Johnson, Chief of Staff, at presentation of Eisenhower Trophy, 20th Annual Armed Forces Benefit Football Game, Chicago, Ill., Sept. 3 (Appearance only).

Maj. Gen. John J. Lane, Commander, Military Traffic Management & Terminal Service, at Advanced Traffic Management Class, Fort Eustis, Va., Sept. 13; at Annual Transportation & Logistics Forum, Detroit, Mich., Sept. 27.

Hon. Willis M. Hawkins, Asst. Secretary of the Army (Research & Development), at American Chemical Society meeting, Atlantic City, N. J., Sept. 14.

Maj. Gen. G. V. Underwood, Jr., Chief of Information, at Minnesota Chapter of Public Relations Society of America, Minneapolis, Minn. Sept. 16; at National Guard Assn. Public Information Workshop Panel, Miami, Fla., Sept. 28.

Lt. Gen. William W. Dick, Jr., Chief of Research & Development, at Optical Manufacturers Assn. meeting, Grossinger, N. Y., Sept. 23.

NAVY

Adm. David L. McDonald, Chief of Naval Operations, at American Legion national convention, Portland, Ore., Aug. 25; at Fleet Reserve Assn. national convention, Miami, Fla., Sept. 14.

Hon. V. M. Longstreet., Asst. Secretary of the Navy (Financial Management), at Armed Forces Management Assn. annual meeting, Washington, D. C., Sept. 1; at Bureau of Naval Weapons Financial Management conference, Norfolk, Va., Oct. 7.

RAdm. P. Corradi, CEC, Chief, Bureau of Yards & Docks, at Society of American Military Engineers meeting, Fort Belvoir, Va., Sept. 8.

VAdm. Paul Ramsey, Dep. Chief of Naval Operations (Air), at General Electric Co. Management Assn. dinner, Lynn, Mass., Sept. 14.

Gen. Wallace M. Greene, Jr., Commandant, U. S. Marine Corps, at Defense Supply Assn. annual convention, Washington, D. C., Oct. 20.

AIR FORCE

Gen. B. A. Schriever, Commander, Air Force Systems Command, at Management Conference, Los Angeles, Calif., Sept. 28; at Space Electronics Symposium, Miami, Fla., Nov. 3.

Lt. Gen. W. A. Davis, Vice Commander, Air Force Systems Command, at Systems Effectiveness Conference, Washington, D. C., Oct. 19.

Col. J. S. Cogswell, USAF, Heads New Industrial Security Office

Colonel James S. Cogswell, USAF, became the first chief of the Office of Industrial Security established at Headquarters, Defense Contract Administration Services (DCAS), of the Defense Supply Agency, on June 30, 1965. The establishment of the new Office of Industrial Security represents the consolidation of more than 100 different offices of the Army, Navy and Air Force which had security cognizance over industrial plants handling defense contracts.

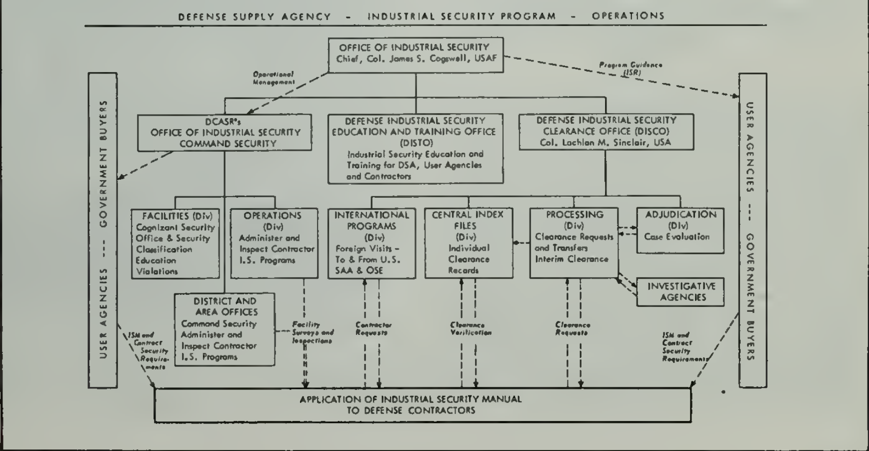
In the reorganization, the 11 DCAS regions, now being established throughout the country, will have single supervision with uniform policy and regulation.

Security clearance of defense contractor employees are centrally processed at the Defense Industrial Security Clearance Office (DISCO), located within the facilities of the Defense Construction Supply Center, 3990 East Broad Street, Columbus, Ohio 43215. Defense contractors now deal directly with DISCO on all personnel clearance matters.

"We establish the requirements, and the contractor develops his procedures and carries them out," states Colonel Cogswell. "We then inspect and look for shortcomings in the security program. If espionage is suspected, it is handed over to a service investigative agency, which in turn usually gives the case to the FBI since it has primary jurisdiction."

Noting that it is difficult to have total security, especially where the human element is concerned, Colonel Cogswell recalls an incident that occurred when a contractor placed his brief case filled with classified material on the top of a cab as he paid the driver. He looked up to see the cab move off with his prized possession while he was busy counting his change.

A common cause of security violation is inter-industry rivalry. Government classified material can be compromised through firms competing for trade secrets, processes, formulas and marketing intelligence.


DEFENSE SUPPLY AGENCY - INDUSTRIAL SECURITY PROGRAM - OPERATIONS
OFFICE OF INDUSTRIAL SECURITY
Chief, Col. James S. Cogswell, USAF
Operational Management
Program Guidance (ISR)
USER AGENCIES --- GOVERNMENT BUYERS
DCASR's
OFFICE OF INDUSTRIAL SECURITY
COMMAND SECURITY
DEFENSE INDUSTRIAL SECURITY EDUCATION AND TRAINING OFFICE (DISTO)
Industrial Security Education and Training for DSA, User Agencies and Contractors
DEFENSE INDUSTRIAL SECURITY CLEARANCE OFFICE (DISCO)
Col. Lachlan M. Sinclair, USA
FACILITIES (Div)
Cognizant Security Office & Security Classification Education Violations
OPERATIONS (Div)
Administer and Inspect Contractor I.S. Programs
INTERNATIONAL PROGRAMS (Div)
Foreign Visits - To & From U.S. SAA & OSE
CENTRAL INDEX FILES (Div)
Individual Clearance Records
PROCESSING (Div)
Clearance Requests and Transfers Interim Clearance
ADJUDICATION (Div)
Case Evaluation
INVESTIGATIVE AGENCIES
DISTRICT AND AREA OFFICES
Command Security Administer and Inspect Contractor I.S. Programs
Facility Surveys and Inspections
Contractor Requests
Clearance Verification
Clearance Requests
ISM and Contract Security Requirements
ISM and Contract Security Requirements
APPLICATION OF INDUSTRIAL SECURITY MANUAL TO DEFENSE CONTRACTORS

How to Request A Classified Visit

When contractor representatives wish to arrange visits to DOD agencies in the Washington, D. C., area that involve disclosure of classified information, it is essential that a request be sent to the specific office or activity within the agency that is to be visited. Paragraph 40c of the DOD Industrial Security Manual contains instructions for the preparation of such visit requests.

Sending a visit request, for example, to the Chief of Naval Material or the Commander, Air Force Systems Command, would not be specific enough to insure that it reaches the intended recipient in advance of the proposed visit. Whenever possible, contractors should find out the exact code number or office symbol, division, branch, etc., of the activity or office to be visited, and the request should be addressed accordingly. By so doing, contractors will have better assurance that their requests will be promptly routed to the right place.

NOTES FOR EDITORS

Briefed below are some events and projects within the Department of Defense which may be of interest to writers and editors. If further information on any of these topics is desired, please write to Chief, Magazine and Book Branch, Office of the Assistant Secretary of Defense, Public Affairs, Washington, D.C. 20301.

DOD SAVES $4.6 BILLION IN FY 1965

The Defense Department Cost Reduction Program saved $4.6 billion during FY 1965. The savings were some $2.1 billion more than previously estimated. As a result, the annual savings goal for FY 69 and each year thereafter will be set at $6.1 billion. The program has permeated all levels of management in the Defense Department and is now widely accepted in defense industry. The DOD effort to provide required military strength at the lowest possible cost has three parts: (1) buying only what is needed to achieve balanced readiness, (2) buying at the lowest sound price and (3) reducing operating costs through termination of unnecessary operations, standardization and consolidation. In a tri-service switch of excess equipment, Secretary of Defense McNamara said the Army acquired excess Air Force missile targets, saving more than $.5 million; the Air Force acquired 1,200 Sparrow missiles excess to the Navy, saving $39 million and the Navy acquired 125 excess Bomarc missiles as target drones from the Air Force for a savings of almost $10 million over a three-year period.

NAVY TO ACTIVATE FIRST HOSPITAL SHIP SINCE KOREA

The Navy has announced that the hospital ship REPOSE is being reactivated at Hunter's Point Division, San Francisco Bay Naval Shipyard. No firm date has been set for her recommissioning. REPOSE will be the first hospital ship in operational use by the Navy since shortly after the Korean action ceased. Other ships being commissioned are the landing ships rocket (medium) CLARION RIVER, SAINT FRANCIS RIVER and WHITE RIVER; the inshore fire support ship CARRONADE; and KULA GULF, an aircraft ferry.

NEW V/STOL AIRCRAFT DELIVERED

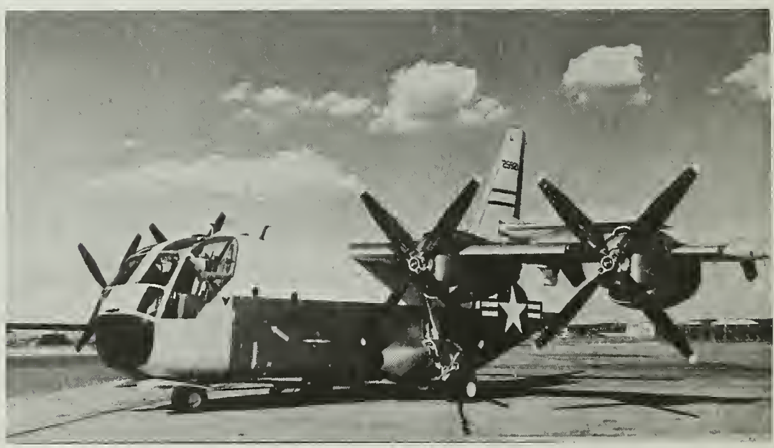
LTV Aerospace Corp. of Dallas recently delivered the first of five XC-142A tri-service V/STOL transports —tilt-wing, deflected slipstream aircraft which can operate vertically from small clearings and fly conventionally at speeds of more than 430 MPH. The XC-142A will go into a test and evaluation program at Edwards AFB, Calif., under rugged field conditions such as might be encountered in a combat area.

DOD RESEARCH STIMULATES COMMERCIAL PRODUCTS

The Defense Department spends more than $7 billion annually on research. A major effort is being made within DOD to disseminate to industry information learned from this research. For example, the three services collectively have spent about $10 million on eye protection systems. A direct result of this research is a new product on the market this year: photochromic sunglasses. In another case, infrared detection equipment has been adapted by the Forestry Service to demonstrate its capability in detecting forest fires. A third example is the appreciable reduction of the size and weight of power conversion equipment, as well as the increase in the efficiency of the conversion process by better than 90 per cent. Numerous commercial applications—results of more than $500,000 DOD research—are in portable television and radio sets. There is available information detailing more than 25 other examples of DOD research spinoff benefits to industry; however, these spinoffs number in the thousands.

NEW LIVE ORAL VACCINE

A successful field trial of a vaccine against adenovirus type 4, the main cause of severe acute respiratory disease in military recruits, has been successfully tested by the U.S. Public Health Service and the U.S. Navy. Taken in the form of a capsule, the vaccine was 100 per cent effective in preventing acute respiratory illness among 135 Marine recruit volunteers at a training camp where adenovirus 4 was epidemic. By contrast, almost 25 per cent of a control group of 132 who had been fed a placebo were hospitalized with severe adenovirus respiratory disease during the same epidemic. The vaccine represents a new concept in immunization. A special coating on the capsule prevents the vaccine from being released until it reaches the intestinal tract. Thus the live vaccine bypasses the normal site of adenovirus infection, the respiratory tract, and causes in the intestinal tract a symptom-free infection that stimulates the production of protective antibodies. Marine Corps training centers at Camp LeJeune and Parris Island conducted the field trials, assisted by USPHS personnel. Adenovirus 4 has caused expensive losses of training time in the Navy and added to the costs of medical care.



The XC–142A, a unique tilt-wing transport aircraft designed to take off and land vertically, is delivered by LTV Aerospace Corp. of Dallas, Tex. for test and evaluation by the Air Force. (See Item 3 Above)

Credit Financing for Military Exports

by
Frank J. Fede, Director, Export Financing Plans
Office of International Logistics Negotiations
Office of Asst. Secretary of Defense
(International Security Affairs)

Almost a third of all sales of military equipment and services abroad in the past four years has been credit financed. This includes sales to industrial countries, such as Italy, the United Kingdom and Australia, as well as sales to developing countries such as India, Iran and others of the Middle East and Latin America. Credit has been extended by both private and governmental sources.

We have received many inquiries from U.S. industry and lending institutions as well as from foreign officials and other Government agencies asking, "How is the credit fund administered; how do the banks and private companies participate in such credit arrangements, particularly with regard to the loan guaranty provision; and what are the various provisions of the Foreign Assistance Act that pertain to Military Assistance sales and credit financing?"

I will endeavor to answer these questions and also briefly discuss the proposed legislation for 1965 which would amend the Foreign Assistance Act of 1961, as amended, currently pending in Congress.

Magnitude of Sales.

The average of all military export sales in the 10-year period 1952-61 was about $300 million annually. During the next three years, FY 1962-64, sales jumped to five times the previous average, or over $1.5 billion annually. The four-year total of all sales orders, commitments and options (including the United Kingdom option to buy fighter aircraft from the United States) amounted to $9.2 billion for FY 1962-65. Of this total $2.7 billion, or about 30%, was or will be made on credit terms.

Let us examine further the principal methods used for financing such sales, in particular the Military Assistance Program (MAP) credit provisions of the Foreign Assistance Act.

Sources of Financing.

There are three basic sources of financing military export sales, as follows:

- Cash. The first and most common form of payment is for cash, either by direct contracts between foreign governments and U.S. manufacturers and lending institutions, or through a Military Assistance Sale (MAS) negotiated between the two governments. Over $6.5 billion, or 70%, of the total $9.2 billion sales orders, commitments and options for FY 62-65 were covered through this means.
- Private Banks/Eximbank. Over $2 billion, or 20% of total sales, were made through credit arrangements with private banks or with the Export-Import Bank of Washington.
- MAP Credit Account. Approximately $500-$700 million, or less than 10% of all sales, were made through the Military Assistance Credit Account. Section 503 of the Foreign Assistance Act provides the general authority for military sales by the Defense Department and describes eligibility of countries to receive such exports.

Each of the above-mentioned categories will be further reviewed and specific provisions of the Foreign Assistance Act indicated as they pertain to Government sales.

Cash Sale.

The two main provisions relating to cash sales are:

- Section 507(a), which provides for sale of defense *stocks* and services, usually by payment in advance or within 120 days after delivery.
- Section 507(b), which provides contract authority for new production under "dependable undertaking," meaning that the U.S. Military Departments can contract for new procurement and use the foreign government's payments as and when required to meet contractor payments. This is the source for the bulk of U.S. MAS sales. Repayments are deposited to a "Trust Account" from which the Military Departments are reimbursed for goods and services rendered.

An amendment to Section 507(b) in 1964 permits short term credit or payment within 120 days after delivery. This is used mainly where a foreign government may encounter legal problems in making payments prior to delivery. Another provision for credit is contained in Secton 507(a) whereby payment terms can be extended not to exceed three years after delivery of the defense articles. This credit is seldom used mainly because of the Military Departments' requirements for repayments to replenish such inventories.

The largest U.S. cash customer is the Federal Republic of Germany, which has agreed to consider purchases from the United States in an amount approximating United States defense expenditures in Germany and thus help offset the cost of United States forces there. Other large cash sales have been made to United Kingdom, Australia, France, Italy, Canada and Japan.

Private Banks/Eximbank Credit.

The largest source of credit is from private banking facilities and Eximbank. Terms are usually short to medium, or three to seven years, and at varying bank rates. Historically, banking facilities have been reluctant to extend credit for military export sales because of the risks involved and lack of Government guaranty for such sales. Eximbank combined with MAP credit in 1963 to extend its first military export sale using its own funds. The early maturities were covered by Eximbank, at normal bank rates, and later maturities by MAP Credit at lower interest rates. The second Eximbank sale was made later in 1963 in combination with an Italian banking institution and again utilized Defense government-to-government contract authority plus promissory notes. Eximbank will consider credits for the industrial developed countries.

Private banking facilities have extended credit for military export sales to Iran and India in FY 1965. In both cases, government-to-government agreements were executed prior to extending the line of credit, and the United States Government provided loan guarantees. A major problem in private bank participation in military sales is the 105% limitation by the Federal Reserve Bank on foreign investments based upon 1964 experience. Since military sales to developing countries generally yield the lowest returns and have the softest terms because of the financial status of these countries, banks are inclined to limit such participation.

The main problem of the Defense Department in dealing with banks is selecting or determining the participating bank since this is not normally a function of Defense. In this regard, Treasury and Eximbank are cooperating with Defense to resolve this difficulty.

MAP Credit Account.

The third source of financing is through credit of the MAP Account. Here credit is extended to developing countries unable to obtain financing from usual commercial sources and where such credit is in the "national interest." Credit is made available only after considering the political, economic and military factors involved. Military Assistance (MAP) appropriated funds are initially provided as capital for such credit sales. Reimbursements then become available under Section 508 of the Foreign Assistance Act to finance additional sales. The MAP Account thus becomes a "revolving account" since repayments from such sales are "available until expended solely for the purpose of furnishing further military assistance on cash or credit terms."

An amendment to the Act in 1964 enabled private banking facilities and manufacturers, as well as Eximbank, to participate in Defense sales by providing loan guaranty authority under Section 509(b). This allows U.S. banks and manufacturers to extend credit for military sales to developing countries which DOD may guaranty for 100% of the credit extended, but only obligate 25% of the MAP Account as a "Contingency Reserve" in the event of a default.

National Interest.

The critical question of MAP fund availability centers about the question of need for such credit in the "national interest." Defense policy states that credit funds will be made available for all sales that should be made in our national interest, and that such sales will receive first priority in the availabilities of the Military Assstance appropriation which also provides military grant aid to developing nations. A practical limitation therefore exists within Government since the various programs, whether military sales, grant aid, or AID economic projects, are competing for limited fund availability imposed by the annual Congressional appropriations.

The MAP Credit Account was initiated in 1958 with a capitalization of $85 million from MAP New Obligational Authority for credit sales. Credit repayments, or reimbursements, from sales re-entered the fund and were further obligated for military sales. This fund was adequate until 1962 when MAP Credit sales, together with cash sales, rose sharply. In each subsequent year, the MAP Account was augmented with additional New Obligational Authority, so that by the end of FY 1965 MAP Credit capitalization totaled $225 million. During FY 1966, MAP Organizational Authority of $50 million is expected to be used for new credits that otherwise cannot be funded.

Terms of MAP credit generally are softer than normal bank financing because of the need to make sales to developing countries. Limited availability of the MAP Account results mainly from long term, low interest rates, such as three to 10 years and 0-5% interest charges. Countries realizing MAP Credit sales are mainly in the Middle East, the Mediterranean Area and Latin America.

Defense Loan Guaranty Participation.

Since credit sales of military equipment to developing countries normally cannot be financed without Government guaranty because of political and financial risks involved, private banks and manufacturers frequently ask the Defense Department how they can participate in such credit.

The answer is not easy since among the factors to be considered in extending such loan guaranty are the views of many U.S. Government agencies, including Defense's evaluations by the Joint Staff, Unified Commands, Military Departments, and other staffs. State Department must weigh the political implications. Agency for International Development (AID) must consider the economic and overall U.S./AID impact since it has basic jurisdiction over the Foreign Assistance Act and its administration. Treasury Department must define the balance of payments and other international financial interests involved. It also works closely with Eximbank in credit considerations. Bureau of the Budget, "watchdog of Federal spending," must provide MAP credit apportionment and program approval. Finally, the National Advisory Council (NAC), a joint Government body, must rule upon credit terms and other special conditions in the light of overall Government policies.

All these factors determine what is in the "national interest," and whether a proposed credit sale to a particular country can be guaranteed by the Defense Department to a private bank, contractor or Eximbank. The potential seller or banker must become, or remain, familiar with the territory and markets of the world through his private enterprise and resources. When it appears necessary for U.S. Government guaranty or MAP Credit Assistance to be considered to consummate the military sale in the "national interest," then the manufacturer or lending institution should initiate Government processing by requesting such consideration through the Office of the Deputy Assistant Secretary (International Logistics Negotiations) in the Office of the Assistant Secretary of Defense (International Security Affairs).

Preliminary Steps.

The Defense Department in the final analysis must authorize the credit guaranty, but there are certain preliminary steps which the potential seller or lender should take prior to contacting or submitting such request for Defense action, as follows:

- Determine the market requirement for the defense item.
- Ascertain as much as possible the preliminary assessment of military, political, economic and other factors influencing the "national interest."
- Evaluate the financial status of the country involved and appraise other credit fund availabilities for the proposed sale.
- Determine the foreign government's support for the proposed sale.
- If it is concluded that MAP credit funding should be utilized, in the light of competing demands for such funds and the fact that no other source is available, then action should be initiated by the potential seller or lending institution, either by asking the foreign government to request such credit or by directly approaching the Defense Department. It should be understood that the Defense Department will also ask and require the purchasing government to sign a government-to-government agreement to protect the guaranty.

Procedures involving MAP credit funding are complicated; to describe them otherwise would be deceptive. However, it should be noted that MAP credit sales have increased each year, so that presently there are over $250 million in Accounts Receivable. Additional funding of this account will probably be made because of the increasing requirements, stimulated partly by the phase-out of grant aid assistance and continued need for U.S. credit by developing nations.

The Defense Department is prepared to utilize the combination of financial resources available to finance all credit sales of military export equipment and services in amounts and of a character necessary in our "national interest." Adequate financing is available and can be found in order to meet our international commitments and requirements. Financing can be met through further cooperative Defense/industry/financial team efforts, which are well under way.

Contract Definition

(*Continued from Page* 4)

Contacts for Indoctrination Program.

Industry:	Mr. Paul Newman National Industry Industrial Association 1030 15th Street NW Washington, D. C. 20005
Army:	Mr. Loyal Titus Army Materiel Command Washington, D. C.
Navy:	LCdr. Gordon Jayne Office of Chief of Naval Materiel Washington, D. C.
Air Force:	Maj. James E. Watson, III Air Force Systems Command Andrews Air Force Base Washington, D. C. 20331
Office of Secretary of Defense:	Mr. J. W. Grodsky Office of Director, Defense Research & Engineering Washington, D. C. 20301

FROM THE SPEAKERS ROSTRUM

Honorable Paul R. Ignatius

Excerpts from address by Honorable Paul R. Ignatius, Assistant Secretary of Defense (Installations & Logistics), before DOD-NSIA Technical Information Symposium for Management, Los Angeles, Calif.

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I wish to direct my comments towards logistic data as an end item; data which we buy from the contractors; data used to support logistic requirements, or for use in systems acquisition and systems management. This type of data is also an important resource to the Department of Defense and industry.

Definitions and Scope of Problems.

The problem of acquiring and managing the items of data that we have purchased is an important problem. . . . Estimates of costs run nearly $2 billion annually! In a broader sense, however, the value is beyond calculation because technical data represents a vital reservoir of engineering knowledge upon which the continued effectiveness of our weapons systems depend. From this standpoint, the problem demands the highest order of management attention we can muster.

To get a rough idea of the magnitude of this problem, think of the pile of paper represented by over 50 million engineering drawings, both old and new, collected in DOD activities and repositories. More millions are being added annually in all shapes and sizes.

How are we to extract needed information from a particular drawing and make it available promptly in support of some military equipment half-way around the world? How do we place the cost to the Government of the whole collection of drawings in proper perspective? How do we know when we have all information needed and avoid acquiring that which is unnecessary? How do we keep our store of knowledge up to date and current with technology? How do we achieve uniformity and avoid duplication of information supporting devices in space, in the air, on the ground and sea, under the sea and, at the same time, make absolutely sure that no vital need is neglected anywhere?

The problem is even more complex. Engineering drawings are only one type of data in our collection. Technical data comes in many more forms, ranging from drawings and sketches to a variety of documents, such as drawings manuals, scientific information, logistics data, design information and configuration management information. Reflecting modern mechanization, new forms such as rolls of microfilm and magnetic tapes are now being employed.

In technical manuals, we inventory about 225,000 titles. These include technical orders and publications covering operation, maintenance and repair of all types and sizes of military equipment. It is interesting to note that a recent study estimated that the total technical manual cost was approximately $400 million annually.

Standardization documents include 35,000 military specifications, standards, qualified products lists, standardization handbooks and bulletins.

Problem Discussion and Status of Solutions.

I believe that the Department of Defense has faced the problem and is attempting to improve the management of all data. We do not know all the solutions, and it will take time and money to unscramble the numerous problems. Three fundamental parameters serve to describe the Defense improvement effort: First, the requirements for data must be explicit. Emphasis must be placed not only on acquiring essential data in a prompt fashion, but also on acquiring only the minimum quantity of data necessary to support the needs of the military services. Second, attention must be given to insure the adequacy of data delivered to the Defense Department. Third, the information contained in the Department of Defense must be readily accessible to the user, whether it be a military or a contractor agency.

Management. One of the significant first steps for improvement was the establishment of a DOD management program for technical data. Until recently data management had been exercised by the Military Departments and their components on an individual basis. Review of the department organization showed that there was neither the requirement nor the mechanics for coordination among the departments. Each had its own concepts and pursued separate ideas of requirements, technical content of documents and methods of handling the information. However, each department has developed data management techniques which show promise. For example, the Air Force was a leader in the development of contractor data acquisition procedures which have been adopted as DOD policy. . . . The Navy was the first to establish and use the data review board. These boards are now established in all Military Departments. The Army was an early leader in exploring and developing techniques for data retrieval, such as the Army Data Retrieval Engineering System (ADRES).

The difference among the Services in handling data are the cause of confusion to you in industry. A lack of uniformity existed which necessitated attention on the part of top management. In addition, a continuing direct coordinating effort with DOD staff elements for the purpose of integrating various programs internally was necessary. . . .

At this point in time, I feel the Department of Defense is looking ahead in the management of technical data.

A DOD policy directive governing the determination of data requirements in the procurement of technical data and information has been issued.

DOD instructions on the overall management of technical data and standardization from exploratory development through production, distribution, use, maintenance and disposal of military items are in effect.

Engineering drawings previously mentioned is a specific area in which improvements are being made. Many of the management steps which have been taken are directed to the better use of drawings. Briefly, some of those efforts are:

- We are stressing the fact that drawings must be adequate for the purpose for which they were intended.
- Contractor quality assurance plans now must include procedures to insure adequacy of data furnished to the government.

- An index of repositories of engineering drawings has been prepared.

- Improvements in mechanized data storage and retrieval systems are being emphasized.

Technical manuals are very important, not only because of the high dollar value, but because of their essential role in providing information for operation and maintenance of our military equipment. We are considering a thorough review of the entire manual program by a recognized publishing house. Our present manual system is over 30 years old without major change.

Price of Data. The cost of data is an unpopular subject, but DOD believes that cost or price of data procured should be known. I assure you Congress also would like to know what it costs. In all truthfulness, wouldn't you as managers in industry like to know? It is difficult to conceive of budgeting for facilities, hardware, people and data for weapons systems without cost estimates. The Department of Defense is preparing a "Derivation of Data Price" policy with the cooperation of industry members. This policy will outline procedures to be used in determining the estimated price of data.

Rights in Data. The controversial problem of rights in data is of such keen interest to Government and industry alike that I have asked Mr. Malloy of my office to discuss this subject later this morning. (See excerpts from Mr. Malloy's speech beginning on this page.)

Deferred Delivery. In the area of data procurement there are a few programs which have been started which will take advantage of the deferred delivery of data concept. This provides for delaying the ordering of data until it is actually needed. This has the dual advantage of allowing the needs to become better defined and avoids cluttering our files with unneeded drawings, many of which are frequently changed.

This policy is being tested on the C–141 program and is planned for application on the F–111. Under this system, we have bought only a small percentage of the drawings we would have bought under former procedures.

Transition of Data from R&D to Production. Another stimulating area for data management is that grey area between the end of the development phase and the beginning of the acquisition or production phase.

One method of preparing the production package is that of executing production engineering concurrently with development. Another method is buying a pilot production as the final development step. The data used in the pilot run would have undergone the acid test—use in production. The general problem is one that is familiar to both industry and Government—whether to award first production to the developer or to obtain competition.

Logistics Data to Designers. From the standpoint of logistics, we also need to provide these designers (of new equipment) with data on parts, components and equipment which have already been subject to engineering scrutiny and proven in use. Congress has expressed concern for the effectiveness of this communication. As a key to this effort the DOD has a program with the cooperation of both industry and military for an "Engineering Data Retrieval System" (EDRS). No doubt many of you have already heard of this test, which is scheduled for completion this summer.

Standardization. Data management and standardization are intertwined and therefore are inseparable. Briefly, standardization is one kind of data management. It serves and supports research and development and logistics, acting in the capacity of a broker of engineering information. A new DOD directive on Standardization Policy has just been published by the Secretary of Defense. Under the new directive, the Standardization Program emphasizes the life cycle of an item. Research and engineering are deeply committed in what was formerly a logistics program. Intra-service and intra-system standardization is advocated in lieu of across-the-board standardization.

Mr. John M. Malloy

Excerpt from address by Mr. John M. Malloy, Deputy Assistant Secretary of Defense (Procurement), before the DOD/NSIA Technical Information Symposium for Management, Los Angeles, Calif.

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. . . I wish to dwell briefly on the relationship or interface of rights in data in the data acquisition process and to some extent in the management process.

First, what rights are we talking about? We are talking about the rights of the Government to use the data it acquires. Such rights, as you know, fall into two categories. One is called UNLIMITED and the other, appropriately enough, LIMITED. When we speak of unlimited rights we mean the right to use, duplicate or disclose data in any manner or for any purpose whatsoever. On the other hand, limited rights means that the Government may not disclose the data, or use it for procurement or manufacturing purposes without the permission of the owner. There are two exceptions to this limitation on the use of data by the Government; namely, it can be used for emergency repair work and it can be released to foreign governments if the national interests of the United States so require. In these situations the use limitations just mentioned are applicable to the data transferred. In other words, the data in possession of the new recipient is limited and cannot be further disclosed.

The Government has extensive needs for many kinds of technical data. Its needs may well exceed those of private commercial customers. For defense purposes, millions of separate equipment and supply items must be acquired, operated and maintained. Data resulting from research and development contracts must be obtained, organized and disseminated to many different users. Finally, the Government must make technical data widely available in the form of contract specifications in order to obtain competition among its suppliers, and thus further economy in Government procurement.

Commercial organizations have a valid economic interest in data they have developed at their own expense for competitive purposes. Such data, particularly technical data, which discloses details of design or manufacture, is often closely held because its disclosure to competitors could jeopardize the competitive advantage it was developed to provide. Public disclosure of such technical data can cause serious economic hardship to the originating company.

It is apparent that there is no necessary correlation between the Government's needs for technical data and its contractors' economic interests therein. The Government must not be barred from bargaining and contracting to obtain such technical data as it needs, even though that data may normally not be disclosed in commercial practice. At the same time, acquiring, maintaining, storing, retrieving and distributing technical data in the vast quantities generated by modern technology is costly and burdensome for the Government. For this reason alone it would be necessary to control closely the extent and nature of data procurement. Such control is also necessary to insure Government respect for its contractors' economic interests in technical data relating to their privately developed items. Such respect is an important factor in fostering successful contractual relationships, in encouraging a ready flow of data essential to Government needs, and in providing incentive to develop, at private expense, items of military usefulness.

The New Policy.

Given this situation, it is obvious to all of you that some rational policy must exist for determining the rights to use data obtained from contractors. Any rights in data policy must be fair and equitable in all respects and be understood and accepted, both in Government and in industry. The policy must serve the interests of both parties. In addition—and this is most important—it must be workable and administrable in a consistent, repeatable way by those on the firing line in industry and in Government.

I think it is worth noting that the efforts to resolve this problem have experienced their 10th birthday. The first DOD data clause as such appeared in the 1955 edition of the Armed Service Procurement Regulation (ASPR). The first comprehensive statement of data policy was published in ASPR in April 1957 and subsequently revised in October 1958. Our current data policy was promulgated in Defense Procurement Circular #6 on May 14, 1964, for use on an optional basis. This policy has now been published in the ASPR and was effective for mandatory use in all procurements which call for data on and after April 1, 1965.

I consider that an outstanding contribution to a rational resolution of the rights problem is embodied in the concept that he who has paid the product development cost has the dominant interest in the rights in the technical data pertaining to that product. I am sure you will agree with me that this is easy to understand and that it is fair and equitable. Simply stated, if the Government pays for the development work, it is entitled to unlimited rights in that which is paid for. On the other hand, if the product is developed at private expense then the Government —with certain exceptions, such as "form, fit and function" data—must be satisfied with limited rights if it orders technical data pertaining to such privately developed products unless, of course, it negotiates for and pays for the data separately. This result is fair if it is understood and accepted by the Government.

Another significant policy advance, in my opinion, is the deferred ordering concept which, while establishing the rights in data at the time of contracting, permits the selection and ordering of data at a later time when specific needs can be intelligently ascertained. Thus, this concept is directly keyed to our policy of acquiring only what we really need. . . .

The new policy also provides new and better protection for subcontractors—a very troublesome area in the past. This is so because a standard contract clause is prescribed for flow down through the subcontract chain. In addition, subcontractors may submit data subject to limited rights directly to the Government instead of to higher tier contractors. Now I don't pretend that all of the subcontractor data problems have been solved. Much depends on the proper administration by both prime contractors and subcontractors.

Another new feature makes provision for an advance determination of rights in data ordered under the contract. The purpose is to avoid problems which might ensue at the time the data is actually delivered. These determinations of data rights are final and binding on both parties. It is not necessary for all data elements to be predetermined. However, it should be possible to identify the data rights for the specific data determined and ordered at the time of contracting. The remaining data rights can be determined at a later date when the exact nature and origin of the data is known. Of course, it will be possible, often, to identify the distribution of rights to all the data to be ordered.

Current Status.

. . . First of all, it should be stated that we are all just beginning to get some practical, day to day, nose to nose, experience with the new data policy. However, I believe that never have the prospects been so good for resolution of the problem of rights in data. I know that the attitude of the Military Departments to the new regulation is good. They have confidence in its workability and I am much encouraged because I find substantially the same attitude on the part of industry. These statements may strike you as being overly optimistic, or as suggesting that we consider ourselves free of operating problems in the data area. What I am saying is that the environment is favorable to resolution of operating difficulties if and when they occur—and we expect to run into some difficulties.

Some elements of DOD initially expressed concern that competitive reprocurement opportunities would be degraded because of the contractor's ability to properly restrict more data than under our prior policy. Whether these are justified fears is an open question at the present time. But the DOD did not adopt this policy blindly in a vacuum. We are prepared to accept a lessening of competitive opportunities if that is, in fact, a result of the proper application of the regulation in the data acquisition process. This is consistent with the notion of contractually offering protection as to certain data pertaining to end items, components and processes developed at private expense provided the data does not fall within the stated exceptions such as the so-called form, fit and function data.

Further, except as to procurements under the formally advertised procedure, there now exists a new negotiation process. The actual data order is now a subject for negotiation and this I regard as an important consideration. Since you will know precisely, or should know the rights which will attach to the data which you agree to deliver, it then follows that if the data is being obtained for use in competitive reprocurment, and as such must be obtained with unlimited rights, a definite relationship between the rights—in this case, unlimited rights—and the quality of the data procured is struck. If the data sought, such as detailed design specifications and drawings, is properly protectible by the contractor, then the Government may accept data of lesser quality (such as form, fit and function) for competitive reprocurement instead of the detailed design engineering drawings which may be more desirable.

Operating experience under the policy has demonstrated that the number of line items of data initially listed on DD Form 1423 as being required by the Government has been materially reduced as part of the negotiation process. Thus we may properly conclude that the give-and-take of the negotiating process, as applied to the data order and influenced by the rights to be acquired, will work and operate to the benefit of both parties in establishing the data order. We are optimistic that the negotiation results will enable each party to satisfy its basic requirements. I recognize, however, that the negotiation of the appropriate data order is a different concept than that which prevailed under the old ASPR and, as such, we may be on the high end of the learning curve.

You and I know that proper understanding of policy will not just happen. It is a matter of indoctrination, training and experience. Just as we in the DOD feel this necessity, so must industry. It is, therefore, appropriate to advert to the importance of the attitude of management which, in the final analysis, has ultimate responsibility for the policy of your company under this regulation. I urge you to stress to your people that this policy has the ingredients of success if it is skillfully applied. I can assure you that this attitude exists in Government and has filtered to the operating people. This is not to say that mistakes will not occur, both by industry and Government personnel, but these cases, we think, will be confined to a minimum and the policy will function effectively in substantially all procurements.

I understand that some people in industry are apprehensive that the procedure in the new policy for predetermination of rights in data will be used by the Government to gain unlimited rights in data where, in fact, the policy calls for limited rights. Obviously this is not intended and, if it is found to occur, corrective steps will be taken. This provision is designed for administrative convenience to resolve questions on specific data rights in advance, wherever practical, thereby benefiting both industry and the Government.

There is another provision that industry as a whole may not fully appreciate and that is the concept of deferred ordering and delivery of data. . . . This particular technique has a tremendous potential in reducing the flow of data to the Government to that which is needed, and no more. The deferred selection and ordering of data until such time as better visibility is attained and requirements are better defined, will insure that the data order will, in fact, be discrete, appropriate to the purpose and manageable. Yet despite these obvious advantages of deferred ordering, I know of cases where people in industry are concerned that the Government will have a blank check to order data. This completely misses the point. The deferred order is limited to data which is specifically or by category (such as maintenance data) identified in the contract. Obviously, in a situation where the contract does not call for data, the Government cannot at a later date request delivery of data, even though the contract may contain the data rights clause. In this situation, the deferred order clause is not appropriate.

Private Expense.

Another area that may require clarification centers around the question: "What is private expense?" "What is developed at private expense?" In its simplest form, "private expense" and "developed at private expense" refer to products, and the data pertaining thereto, which were developed by you with your own funds. If the Government has contracted for the development, it cannot be said to have been at private expense. But in such cases, it is a requirement of the regulation that the Government's sponsorship be specifically identified in the schedule as research and development work if the Government is to secure data with unlimited rights. Obviously, it should not be difficult for anyone to recognize the precise contractual situation. If the Government has not specified research and development work, even though such work is being performed, then it suffers the loss of its unlimited rights position, and it must accept the result.

Moreover, it is clear that we do not consider our contribution to your independent research and development program as a cloud on your right to claim such developments under the independent research and development program as being at private expense. As we have stated in Defense Procurement Circular #22, we consider the Government should acquire no greater rights than any other customer buying your products or services by virtue of paying our reasonable share of your cost of doing business, including costs incurred under independent research and development programs. It is equally obvious that profits generated through product sales or otherwise, or capital contributions allocated to design and development of new products, do not constitute a basis for asserting development at Government expense, no matter whether the profits or capital contributions result from Government or commercial business. In short, and to put it another way, development at Government expense means development under a contract which specified research and development work and which was funded by the Government in whole or in part.

Prime-Subcontract Relationship.

I should like to touch again on the prime-subcontractor relationship. There is clear agreement that our policy must be as fair to a subcontractor as it is to a prime. While we do not blindly assume that absolute fairness can be achieved through the force of a regulation and related contractual agreements, it can be aided, and we think we have done just that. For example, in the usual situation, a prime contractor cannot prescribe that all data will be furnished with unlimited rights on the premise of complying with our policy. Moreover, it is the subcontractor, rather than the prime, who makes the initial determination as to Government rights in data ordered by the prime from his subcontractor. The subcontractor does this in accordance with the terms of the basic data clause which must be flowed down to him with the data order. This clause does not by its terms convey any rights in the data to the prime; rights are vested solely in the Government. If data is properly subject to limited rights, the subcontractor, if he wishes to do so, can deliver the data directly to the Government, rather than through the contractual tiers. This is now a contractual right rather than subject to special arrangements as in the past. Industry representatives who normally find themselves in the role of subcontractors have strongly and favorably indorsed this change.

Protection of Data Subject to Limited Rights.

It is, of course, basic to this new data rights policy that the Government can and will protect limited rights data (which may include so-called proprietary data) from disclosures to others except for specified purposes. Obviously, there is a certain element of risk involved in any disclosure of data. However, I can say that the Government will not take its obligation in this regard lightly. Steps will be taken promptly to correct any abuses that may develop. Most of the people who have considered this aspect of the new policy, both in Government and industry, consider that no insurmountable problems will develop in this regard.

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Nuclear Weapons Effects Testing and Research Program Information Available

Government agencies and contractors interested in the nuclear weapons effects testing and research program now can benefit from the expanded facilities of the Defense Atomic Support Agency (DASA) Data Center, Santa Barbara, Calif. The center, operated for DASA by General Electric-TEMPO, has consolidated the center's data collection activity and computer program library at a new location in downtown Santa Barbara.

The Data Center was established in 1961 by DASA to analyze and disseminate scientific and technical information on selected nuclear weapons effects phenomenology. The center's facilities are available to authorized, cleared DOD agencies and their contractors. It serves scientific groups studying the basic phenomenology of nuclear detonations, as well as systems oriented researchers concerned with aerospace systems, satellite telemetry, military communications, radar detection systems, penetration aids, missile and anti-missile weapon systems.

The computer program library collection may be released to authorized users upon request. Program areas include EM blackout, geomagnetics, fluid dynamics, blast wave propagation and ionization. Information on new computer programs and advanced computer program work is regularly announced in Data Center publications.

Visitors to the center are provided study areas and facilities for the examination of virtually all basic forms of data. Facilities and equipment are available for visual examination or scaling of photographic records and measurements of densities, inspection of original data records on magnetic tapes and examination of paper records. Where required, arrangements can be made for reproduction of selected data.

Visit clearance requests (category 4/DOD Industrial Security Manual) should be submitted to the DASA Data Center through the visitor's cognizant military contracting office for endorsement of need. Visit requests from DASA contractors may be sent directly to the Data Center. All inquiries and visit requests should be submitted as early as possible in advance of the anticipated visit and should be addressed to: DASA Data Center, General Electric Company-TEMPO, 816 State Street, Santa Barbara, Calif. 93102, Telephone: (Area Code 805) 965-0551.

The Center constantly seeks information, especially nuclear related material, which has been or is being gathered by DOD agencies not directly associated with DASA funded research programs.

MEETINGS AND SYMPOSIA

SEPTEMBER 1965

1965 Semi-Annual Conference of the American Society of **Photogrammetry**, Sept. 22–23, at Wright-Patterson AFB, Ohio. Cosponsors: American Society of Photogrammetry and the Research and Technology Div. (AFSC). Contact: A. J. Cannon (SEG), Research and Technology Div. (AFSC). Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111, ext. 35214.

American Society of **Photogrammetry** Conference, Sept. 22–24, at the Sheraton-Dayton Hotel, Dayton, Ohio. Sponsors: Aeronautics Systems Div., Research and Technology Div. (AFSC), and the American Society of Photogrammetry. Contact: J. R. Quick (MCLAEB), Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111, ext. 35167.

AF Industry **Data Management** Symposium, Sept. 28–30, at Beverly-Hilton Hotel, Los Angeles, Calif. Sponsors: Ballistic System Div. (SBAMA), DOD and Industry. Contact: Lt. Col. D. A. Cook (BSOM), Norton AFB, Calif., telephone (Area Code 714) 889-4411, ext. 6451.

Sixth Symposium on **Non-Destructive Testing**, Sept. 28–30, at Sheraton-Dayton Hotel, Dayton, Ohio. Sponsor: Air Force Materials Laboratory (AFSC). Contact: Mr. Rowand (MAG), Air Force Materials Laboratory, Wright-Patterson AFB, Ohio 45433, telephone (Area Code 513) 253-7111, ext. 40209.

OCTOBER 1965

Ninth Annual **Organic Chemistry** Conference, Oct. 5–6, at Natick, Mass. Sponsor: U.S. Army Natick Laboratories. Contact: Dr. Louis Long, Jr., Asst. Head, Organic Chemistry Laboratory (PRD), U.S. Army Natick Laboratories, Kansas St., Natick, Mass.

J. M. Burgers' 70th Anniversary Symposium on the **Dynamics of Fluids and Plasmas**, Oct. 6–8, at the University of Maryland, College Park, Md. Sponsor: Air Force Office of Scientific Research. Contact: P. A. Thurston (SREM), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C. 20333, telephone (Area Code 202) OXford 6–3442.

1965 Congress of the International **Federation for Documentation (FID)**, Oct. 7–16, at Washington, D.C. Sponsors: Air Force Office of Scientific Research, Office of Naval Research, Army Research Office, National Science Foundation and Council on Library Resources. Contact: Rowena Swanson (SRIR), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave., S.W., Washington, D.C. 20333, telephone (Area Code 202) OXford 6–5374.

NOVEMBER 1965

V/STOL Symposium, Nov. 3–4, at Wright-Patterson AFB, Ohio. Sponsor: American Helicopter Society. Hosts: Aeronautics System Div., Research and Technology Div. and Systems Engineering Group. Contact: George Dausman, Wright-Patterson AFB, Ohio, telephone (Area Code 513) 253–7111, ext. 25104 or 23164.

Fourth **Hypervelocity Techniques** Symposium, Nov. 15–16, at Arnold Air Force Station, Tenn. Sponsors: Arnold Engineering Development Center, ARO, Inc., and Denver Research Institute. Contact: J. Lukasiewicz, Arnold Air Force Station, Tenn., telephone (Area Code 615) 455–2611, ext. 7204 or 7205.

Fourth Annual Symposium on **Physics of Failure in Electronics**, Nov. 16–18, at the Illinois Institute of Technology Research Institute. Cosponsors: Rome Air Development Center and the Illinois Institute of Technology Research Institute. Contact: Joseph Schramp (EMERP), Rome Air Development Center, Griffiss AFB, N.Y., telephone (Area Code 315) FF6–3200, Ext. 2813.

DECEMBER 1965

Fourteenth Annual **Wire and Cable** Symposium, Dec. 1–3, at the Shelburne Hotel, Atlantic City, N.J. Sponsor: Army Electronics Command. Contact: Milton Tenzer, Symposium Chairman, Electronic Parts and Materials Div., Army Electronics Laboratory, Fort Monmouth, N.J. 07703, telephone 535–1834.

International Symposium on **Differential Equations and Theory of Systems**, Dec. 27–30, at the University of Puerto Rico. Sponsors: Air Force Office of Scientific Research, Brown University and the University of Puerto Rico. Contact: Maj. B. R. Agins (SRMA), Air Force Office of Scientific Research, Tempo D, 4th St. and Independence Ave. S.W., Washington, DC. 20333, telephone (Area Code 202) OXford 6–1302.

JANUARY 1966

Research **Effectiveness** as Related to **Vehicles**, Jan. 28–29, at Detroit, Mich. Sponsor: Department of the Army. Contact: Paul D. Denn, Chief, Research Div., U.S Army Mobility Command, Warren, Mich, telephone 756–1000.

ALL MEETINGS LISTED ARE UNCLASSIFIED.

Air Force Assn. Plans Fall Meeting

More than 3,000 aerospace industry leaders, military personnel, Government executives and educators are expected to attend the Air Force Association's (AFA) fall meeting to be held at the Sheraton-Park Hotel in Washington, D. C., Sept. 15–17.

The broad theme of the meeting is aerospace education with a seminar on "Scientific Literacy" scheduled for Wednesday afternoon, Sept. 15. Dr. Edward Teller, the distinguished nuclear physicist, will moderate the seminar, emphasizing the need in a democratic society to educate the public to the opportunities and dangers inherent in our advancing technology.

In a series of aerospace development briefings—a concept pioneered by AFA last September—top industry scientists and engineers will demonstrate equipment and techniques being developed for aircraft and spacecraft of tomorrow. These briefings will be presented in organized tours, from 9:30 a.m. to noon on each of the three days, for educators, members and staffs of Congressional committees, military and civilian members of Government agencies concerned with aviation and space programs and foreign military attaches on Washington embassy staffs.

In past years, AFA has scheduled the education seminar and industry presentations as part of its national convention. Because both these events and the convention have grown in scope and attendance, AFA's Board of Directors voted last year to separate the two, with a fall meeting to be held annually in Washington, D. C., and the convention in the spring at various cities throughout the nation.

AFA's 20th national convention will be held in Dallas, Tex., March 22–25, 1966. San Francisco, Calif., has been selected as the site of the 1967 convention scheduled for March 15–18, 1967.

CALENDAR OF EVENTS

Sept. 8–9: National Security Industrial Assn. Anti-Submarine Warfare Ship Subcommittee meeting, Newport, R. I.

Sept. 28-30: Air Force-Industry Data Management Conference, Beverly Hilton Hotel, Los Angeles, Calif.

Oct. 3–6: Society of Petroleum Engineers Convention, Denver, Colo.

Oct. 4–7: National Symposium on Space Electronics, Miami Beach, Fla.

Oct. 10–14: Electrochemical Society meeting, Buffalo, N. Y.

Oct. 11–13: American Oil Chemists Society meeting, Cincinnati, Ohio.

Oct. 12: American Ordnance Assn. meeting, Chicago, Ill.

Oct. 13–15: Propeller Club of the U. S. meeting, Galveston, Tex.

Oct. 18–20: Defense Supply Assn. convention, Statler Hilton Hotel, Washington, D. C.

Oct. 18–22: American Society of Civil Engineers meeting, Kansas City, Mo.

Oct. 19–21: American Society of Mechanical Engineers meeting, San Francisco, Calif.

Oct. 25–27: Assn. of the U. S. Army annual meeting, Washington, D. C.

Oct. 26: American Society of Safety Engineers meeting, Chicago, Ill.

Nov. 3–4: National Security Industrial Assn. research & development symposium, Washington, D. C.

Nov. 30–Dec. 2: American Ordnance Assn. equipment manual symposium, Statler Hilton Hotel, Washington, D. C.

Kentucky Industry Procurement Conference Set

The Department of Defense will participate in a two-day federal and state science and industry procurement conference in Louisville, Ky., Sept. 15 and 16 at the invitation of Kentucky Governor Edward T. Breathitt.

The conference is being sponsored by the Kentucky State Department of Commerce, the Kentucky Chamber of Commerce, and the Associated Industries of Kentucky.

Procurement specialists from the Military Services will be joined by representatives of the National Aeronautics and Space Administration, Atomic Energy Commission, Veterans Administration, the Department of Commerce and the Small Business Administration, as well as by state agencies and defense major prime contractors, to conduct a counselling and assistance program for those interested in defense and other U.S. Government agency business opportunities.

Commissioner Katherine Peden of the Kentucky State Department of Commerce, who initiated the procurement conference, has designated Mr. James Beasley, Director of the Division of Continuing Industries, to act as coordinator for this second annual procurement conference.

Know Your Small Business Specialist

Small business or labor surplus firms interested in competing for Defense procurements do not have to go to Washington to find out how to do business with the DOD.

The Small Business/Labor Surplus Specialist at the nearest military procurement office is equipped to provide counseling and assistance to the prospective bidder.

In most cases the best method of obtaining defense contracts is to maintain contact with the purchasing offices that buy the particular product or service concerned, make the firm's capabilities known, and keep abreast of purchasing being done at those offices.

A valuable aid to prospective bidders is a booklet called "Selling to the Military." The book contains general information on items purchased and the location of principal military purchasing offices. It can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 35 cents.

DOD Assumes Responsibility For Small Business Set-Asides

The Department of Defense has agreed to assume full responsibility for the review of planned procurements and the initiation of small business set-asides as a result of a recommendation from the Bureau of the Budget.

Effective July 1, 1965, the Small Business Administration (SBA) ceased to assign representatives to military procurement offices. Future procurement reviews and set-aside determinations will be entirely handled by the DOD Small Business Specialists and the Contracting Officer at the procuring activity.

New procedures are being formulated by the Office of the Secretary of Defense and the Small Business Administration to establish an SBA surveillance program for the review of the set-aside program and its administration.

A change in small business set-asides for military construction also became effective July 1. Proposed military construction procurements of $500,000 or more will no longer be set aside for exclusive small business participation.

With the implementation of these changes, DOD is taking positive action to insure that small business firms continue to receive maximum consideration in defense procurements. Appropriate revisions to the Armed Services Procurement Regulation reflecting these changes are contained in Defense Procurement Circular No. 31.

Seminars Scheduled on National Security

Regular and reserve military officers, civilian Government Officials, industrial executives, and their wives are invited to attend two special National Security Seminars scheduled from 8:30 a.m. to 3:50 p.m., Sept. 13–17 and again Sept. 20–24, at the Department of Interior Auditorium, Washington, D. C.

Each seminar consists of 33 factual, illustrated presentations covering the various factors affecting our national security in the context of world affairs. These seminars are in preparation for the 14 regularly scheduled seminars conducted by the Industrial College of the Armed Forces each year in selected cities throughout the nation. For information concerning registration, contact Captain C. F. Pfeifer, USN, Industrial College of the Armed Forces, Washington, D. C. 20315, telephone (Area Code 202) OXford 5-8205.

BIBLIOGRAPHY

DOD Directive 5105.36, "Defense Contract Audit Agency," June 9, 1965. Establishes mission and functions of the Defense Contract Audit Agency.

DOD Directive 3200.9, "Initiation of Engineering and Operational Systems Development," July 1, 1965. Establishes DOD policies governing Concept Formulation and Contract Definition in the initiation of Engineering Development and Operational Systems Development of major projects. (Cancels DOD Directive 3200.9, "Project Definition Phase," Feb. 26, 1964.)

DOD directives and instructions may be obtained from:
Publications Distribution Branch
Office of the Secretary of Defense
Room 3B 200, The Pentagon
Washington, D. C. 20301

Defense Procurement Circular No. 29, June 4, 1965. New Section VI—Balance of Payments and Offshore Procurement Material.

Defense Procurement Circular No. 30, June 25, 1965. Requests for Wage Determinations; Standard Form 33, Correction of First Printing of Dec. 1964 Edition; DD Form 350, Modification of Due Date and Distribution.

Defense Procurement Circular No. 31, July 1, 1965. Small Business Set-Aside Program; Labor Standards Provisions (Standard Form 19-A).

Defense Procurement Circular No. 32, July 6, 1965. Contract Auditor Processing of Cost-Reimbursement Vouchers; ASPR Section XV, Part 3—Cost Principles.

Each Defense Procurement Circular (DPC) is designed to place new or changed policies or procedures in effect prior to publication of an Armed Services Procurement Regulation (ASPR) revision. The items in each circular are cancelled after six months, unless specifically eliminated earlier by a new DPC or by publications in the ASPR. ASPR subscribers will receive DPC's and ASPR revisions through the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Systems Management, Configuration Management during Definition and Acquisition Phases. This Air Force System Command manual establishes policy, provides guidance and assigns responsibilities for configuration management of system/equipment programs. Issued in loose-leaf form 356 p. il. Catalog No. D301.-45/14:375-1 $3.50

Apollo Program, Apollo Configuration Management Manual. Establishes uniform configuration management methods and procedures which will accurately define all Apollo Program equipment at any point in time. 353 p. il. Catalog No. NAS1.18:Ap7 $2.00

Design Criteria and Construction Standards. This NASA manual provides design criteria and construction standards for use in planning, programming, designing and constructing new NASA facilities and altering existing facilities. 237 p. il. Catalog No. NAS1.18:D46 $2.00

The Balance of Payments Statistics of the United States, A Review and Appraisal. Contains the report of the Review Committee for Balance of Payments Statistics to the Bureau of the Budget, on the adequacy of U. S. balance of payments statistics and recommendations for their improvement. 194 p. il. Catalog No. PrEx 2.2:B18 $1.50

Hearings on Military Posture and H. R. 4016. Presents the hearings on Military Posture and H. R. 4016 to authorize appropriations during FY 66 for procurement of aircraft, missiles, and naval vessels, and research, development, test, and evaluation, for the Armed Forces and for other purposes. These hearings were held before the House Committee on Armed Services, 89th Cong., 1st sess., during February and March 1965. 1428 p. il. Catalog No. Y4.Ar5/2a:965-66/7 $3.75

Publications that require remittance are available for purchase at U. S. Government Printing Office, Washington, D. C. 20402.

Two Color Drawings to be Used by Army Engineers in Bid Proposals

Contractors who bid on future U.S. Army Corps of Engineers projects can expect to find, for the first time, two-color project drawings on "half-size" sheets in addition to the specifications and other items which make up the package of bid documents.

Under this new system, being incorporated into the Corps' cost reduction program, standard 28x40-inch drawings are to be prepared as usual and then reduced to 12x20 size. The various colors will be used to show new work in relation to existing construction or to distinguish between highly complex mechanical and electrical systems in new projects.

The Office of the Chief of Engineers has announced that the Corps' District Engineer and other field offices are being urged to consider these changes in the invitation-to-bid package for the sake of greater efficiency and to give prospective bidders and the contracting officers higher quality plans from which to make their estimates.

This is not a Corps-wide requirement, the Office of the Chief of Engineers points out, since each field agency will be free to use the proposed system on a selective basis wherever it will reduce costs or otherwise benefit the Government.

In the past, two-color drawings have been considered too expensive for use in the construction industry. But today, low-cost platemaking and offset printing techniques have made it possible to reproduce multi-color drawings cheaper than single-color printing in the past. While these multi-color plans are slightly more expensive than single-color drawings, overall savings should result by virtue of the time expected to be saved by contractor and Government personnel who will be working with plans which are clearer and easier to read.

The additional colors, usually blue or red, will provide prospective bidders with high quality drawings which are easier to understand and more efficient to work with. This should result in more realistic estimates and possibly lower prices by contractors bidding on the job, depite the slight additional cost of printing the drawings in two or more colors.

The new system should also bring similar savings to the Government because less time will be involved in preparing the Government's cost estimates. It is estimated that, when fully implemented, the system will save the Government at least $500,000 annually.

Small Business & Labor Surplus Program

(*Continued From Page 9*)

Illustrative of this process is a recent Navy multi-year procurement of bomb fins for the Mark–14, which was declared a labor surplus area set-aside. The procurement was divided into two segments of 133,150 units each with 24 firms bidding on the non-set-aside portion which was awarded to Columbus Milpar, Columbus, Ohio, as low bidder. Columbus Milpar indicated an intention to perform the contract in the labor surplus area of New Lexington, Ohio, and was, therefore, also eligible for the set-aside portion. The contracting officer determined, however, that the firm did not have the capacity to perform both portions of the contract and negotiations were conducted with and an award made to the next eligible labor surplus area concern, Lasko Metal Products, Westchester, Pa. Lasko agreed to perform the set-aside portion of the contract in the labor surplus area of Philadelphia and Cressona, Pa., and Messena, N.Y. Each award was valued at approximately $7 million.

Subcontracting Procedures and Practices.

In contracts up to $500,000 the contractor assumes the obligation to subcontract the maximum amount to small business or labor surplus area concerns consistent with the efficient performance of the contract. In contracts over $500,000, the contractor is required to take a number of specific actions designed to insure that these firms are considered fairly in the subcontracting role.

Supplementary to these requirements, there is a joint DOD-Aerospace Industries Association program for labor surplus area referrals to meet 18 categories of needed sources. Some 356 firms have been referred by the Army, Navy, Air Force and DSA to participating prime contractors for subcontracting consideration under this program.

DEFENSE PRIME CONTRACT AWARDS TO SMALL BUSINESS

(Amounts in Thousands)

	FY 1965 July-May	*FY 1964 July-May*
Procurement from All Firms	$21,879	$23,580
Procurement from Small Business Firms	4,467	4,132
% Small Business	20.4	17.5

Procurement Clinic

DOD representatives participate extensively in local, state or regional clinics to acquaint small business and labor surplus area concerns with the Federal contract process through a combination of presentations, discussions, films, exhibits and pass-out materials.

DOD counselors are on hand with current IFB's and RFP's to provide interested firms with tangible examples of prime and subcontract business for their consideration. Representatives of the major prime contractors located in the area also participate along with other major Government procuring agencies, including the National Aeronautics and Space Agency, General Service Administration, Atomic Energy Commission and the Veterans Administration. Service agencies such as the Department of Commerce, the Small Business Administration and the Department of Labor are on hand to explain the programs of their agencies designed to assist small business and labor surplus area firms.

Counseling and Assistance.

The DOD Directorate maintains a Central Military Procurement Information Office to act as a guide service for businessmen in their dealings with the military establishment.

Specific information dealing with particular procurements or one of the military services is available at the local field installations from the Small Business and Labor Surplus Specialist assigned to the procuring activity. These specialists can provide assistance in being placed on bidders' lists, provide leads for subcontract opportunities and arrange referral to other procuring activities.

Special Projects

As the largest purchaser of goods and services in the nation, the procurement policies of the DOD have a decided effect on the economic conditions in regions, states and local communities. From time to time, the Directorate for Small Business and Economic Utilization Policy is asked to participate in a variety of actions concerned with the socio-economic implications of defense procurements. In the past, these have included working with Congressional Committees on special studies; the President's South Bend Committee, the President's Committee on the Handicapped, the Alaska Disaster Program and the Appalachia Program. Liaison is also maintained with the Office of Emergency Planning, Small Business Administration, Department of Commerce and the Department of Labor on related activities.

Greater Washington Council for Small Business/Labor Surplus Area Formed

Sixty-three DOD specialists met at Cameron Station, Alexandria, Va., May 13, to inaugurate a Greater Washington Small Business/Labor Surplus Area Council designed to serve as a model for similar groups throughout the country.

Establishment of such councils was recommended in the 14th Annual Report of the Senate Small Business Committee and will eventually be broadened to include other Government agencies.

The purpose of the councils is to improve communication through an interchange of ideas and problem areas, and to provide a forum for guest speakers and panel discussion on matters of mutual interest regarding DOD policies and programs for small business and labor surplus areas.

The program for the May 13 quarterly meeting covered the Certificate of Competency Referral Program. Panelists included Colonel C. O. Duty, Office of Assistant Secretary of the Army (Installations and Logistics); Mr. T. G. Waale, Small Business Administration Liaison Officer; Mr. Robert Owens, Deputy Director, Small Business/Economic Utilization Policy; and Mr. Morris Questal, Office of Assistant Secretary of the Navy (Installations and Logistics).

Members of the first year's Executive Committee of the Work Council are Anthony J. Caiozzo, Army Materiel Command, Chairman; Herman G. Fowler, Bureau of Supplies and Accounts, Vice Chairman and Navy representative; and department representatives Jean P. Jaquette, Sr., Army Supply and Maintenance Command; and I. E. Peterson, DSA Headquarters. The chairmanship will rotate annually.

McDonnell Small Business Newsletter Lauded by Lazure

The Small Business and Labor Surplus Area Program conducted by McDonnell Aircraft Corporation is described by Albert C. Lazure, DOD Director for Small Business and Economic Utilization Policy, as "an excellent example of what our subcontracting program hopes to achieve."

K. S. Vandergrift, McDonnell's Corporate Small Business Administrator, publishes what Lazure considers to be one of the most comprehensive and informative Small Business Newsletters issued by major defense prime contractors.

A typical McDonnel newsletter carries current subcontracting figures, a listing of new small business sources, upcoming events of interest to small business, DOD-Aerospace Industries Association referrals, Small Business Administration notes, labor surplus area firms and changes in area classifications, new publications and changes in key personnel.

The Systems Effectiveness Concept
An R&D Appraisal Process

by

Cdr. Keith N. Sargent, USN
Head, Systems Effectiveness Branch
Office of Chief of Naval Material

Within the broad spectrum of concerns in the Navy Research & Development (R&D) Program there is one effort area which is singularly far-reaching. It is one which will be of increasing import to all segments of industry involved in Navy R&D work. This is identified as Systems Effectiveness.

To understand Systems Effectiveness, it is well to consider briefly some of the problem areas which led to the evolution of the concept. The fundamental problem is the spiraling complexity of modern warfare systems. While complexities can be reduced to some extent by avoidance of what Dr. Fubini, former Assistant Secretary of Defense (Deputy Director of Defense Research & Engineering), so aptly termed the American Syndrome—gadgeteering, the reality of modern warfare is that complex threats inevitably lead to complex counters.

As systems become more complex the probabilities increase that some element of the system will be deficient or defective so that the effective operation of the system will be degraded. Realization of this has led to a concerted effort in reliability design and engineering. This effort in itself has added to complexity particularly where design redundancy was employed. Further, the impact of the so-called law of diminishing returns is keenly felt as higher orders of MTBF (Mean Time Between Failure) for components is attempted. Component costs become very burdensome if not intolerable.

When these costs become intolerable the problems can be met through maintenance and repair procedures, at least in manned systems. As a result another area of design and development, termed maintainability, has evolved. While this can bridge the gap between achieved reliability and reliability in an absolute sense, it is not without costs in dollars as well in additional problems being generated. The latter generally fall into two categories, logistics support and increased technical personnel requirements. These, in turn, lead to problems of man-machine relationships and operability as well as involving a much wider range of functions and activities than has been customarily regarded by the design and engineering notion of system in a hardware sense.

As a result it has become clear that the idea of what constitutes a warfare system had to be expanded and explicated. Further a concept was needed within which the foregoing factors could be related one to the other. This concept had to provide a disciplined structure with which to analyze the relative import of these factors as related to the system. This would provide a basis for trade-off decisions taking into account the additional considerations of costs and time.

The concept which has been evolved is premised on a fundamental reality. There can be but one philosophical end for any warfare system. That end is mission accomplishment. With this end in view, a definition of Systems Effectiveness has been postulated. This definition is that Systems Effectiveness is a measure of the extent to which a system can be expected to complete its assigned mission within an established time frame under stated environmental conditions. Implicit in this definition of a system as the total complex of men, materials and facilities required to accomplish a military mission.

Within the context of the foregoing definitions and raisons d'etre, just what is the Systems Effectiveness concept and how does the Navy and industry come to grips with it in the real world?

The gist of the concept is expressed in a series of three conceptual models which are related through a progression: The basic model is $E_s = PAU$
where E_s is the index of Systems Effectiveness
P is the index of Performance
A is the index of Availability
U is the index of Utilization

In deriving the indices for P, A and U, the assumption is made for each term that there is complete achievement of the other, i.e., the value of P is premised upon 100% availability and utilization. Further, the terms can be expressed in predicted values or achieved values depending upon the state of development.

Since $E_s = PAU$ is the basic model, each of the controlling indices should be defined a bit more explicitly.
P expresses the performance of the system to a base representing absolute mission achievement. This is in terms of pure operational characteristics, e.g., overpressure on target, troops landed, area neutralized, etc.
A expresses the period or fraction of time that the system is ready and capable of fully performing its mission. In view of the somewhat similar use of the term A by reliability engineers, it is important to understand that A in this expression goes beyond the reliability definition of $A = \frac{MTBF}{MTBF + MTRR}$. It is a continuous availability to completion of mission rather than the reliability expression which holds only to the point t (time) = 0.
U expresses the fraction of the performance capability actually utilized or capable of being utilized due to the specific, strategic or tactical application of the system and the total functional as well as physical environment anticipated to be encountered.

These indices are essentially dimensionless numerical expressions of judgment. They serve to offset the inability to measure many of the well recognized factors which determine whether or not a system is effective. This, however, is not to say that dimensioned quantification is not involved. In deriving each index a great deal of mathematics, both empirical and probabalistic, is involved. As the state of the art advances, more explicit quantification will be employed thereby reducing the degree to which resort must be made to quantizing. However, there appears little likelihood that quantizing can be eliminated in the foreseeable future. It must then be recognized that the indices have no empirical value in themselves and are meaningful only as related to their specific bases. Thus they are figures of merit which have utility in comparative evaluations but must never be used out of the context of their bases.

The second of the series of expressions: $E_c = \frac{(PAU)}{W(C_a + C_u)}$ where W is the index of military worth of the mission of the system. C_a is the dollar costs of acquisition of the system including its pro rata share of research and development costs.

C_u is the dollar costs of utilization or ownership including its share of support facilities, manpower, training, etc.

PAU—as previously indicated

Essentially this expression is the ratio of the effectiveness of the system to its total costs. The term W is introduced to provide a means for comparative evaluation of multi-missioned systems which are not identically missioned albeit one or more mission capabilities are common to the systems being compared. It is a numerical value used to express an intuitive value judgment. As such it must be expressed to a base number. Its principal utility lies in greater precision of judgment than is usually found in narrative expressions and in the visibility that it gives to the value judgment. This term could be extremely troublesome if there were great disparity between the missions of systems to be compared. This is not likely. Indeed the use of the Cost Effectiveness expression is primarily in connection with similar or identically missioned systems or a single system at various points in time. In the latter two cases the term W cancels out. Further, the closer the systems are in mission assignment the less sensitive the expressions are to changes in W values.

To assist in the valuation of W in the multimissioned case a subordinate expression for W is given: $W = \frac{(F_1 w_1 + \ldots . F_n w_n)}{n}$ where F is the fraction of the system effort devoted to a given mission, w with the summation of $F_1 + \ldots . F_n$ being unity.

The third expression in the series is that for what has been termed Defense Effectiveness. $E_d = \frac{W}{E_t} \frac{(PAU \quad)}{(C_a + C_u)}$ where the term E_t, the index of the degradation of military worth as a function of time, is introduced into the Cost Effectiveness expression. Both of the terms, W and E_t, are indices which together form a coefficient with which to express the military judgment factor which Dr. Alain Enthoven, Deputy Assistant Secretary of Defense (Systems Analysis) has so clearly shown as being a vital part of Defense management.

Military judgment is an intuitive process which is quite subjective. However, this subjectivity is highly tempered by hard experience. While it is true that scientists and engineers alike prefer to avoid intuitive answers and thus dislike decisions premised on intuitive factors, both make such judgments constantly in the performance of their work. These judgments are acceptable to them because of their awareness of the experience underlying their own intuition. That is to say that the weighting factors of their judgments are visible to them.

The principal thrust of the System Effectiveness concept is to give visibility to military judgments through the assignment of quantitive values which can be examined as to their impact and correlated with the judgment values assigned by others. A corrolary to this is the knowledge of exactly where judgments are applied and the sharpening of these judgments through the requirement to express them as numerics. At the very least, the Systems Effectiveness concept provides for the recording of how decisions were developed.

In this regard, Systems Effectiveness is a discipline. It is a discipline which requires the project engineers and managers to essentially "put their money where their mouth is.)" It is a discipline which requires both the military and industry to explicitly state their judgment values for the edification of the other. It is a discipline within which all of the factors which contribute to the effectiveness of mission accomplishment can be related. Having thus related these factors, gaming techniques can be employed to determine the optimum combination of factors within achievable values of each factor.

There are two objectives guiding the use of the Systems Effectiveness concept. The first applies in both the near-term and long-range areas. This is the upgrading of the confidence factor in management decisions. The knowledge of the areas where intuitive judgments occur together with a value associated with each judgment is considered to be a major step forward in upgrading the confidence factor. Further, the necessity to assign a value which can be appraised by others tends to assure considered judgements rather than "shooting from the hip."

The second objective lies in the long-range area. It is to provide the relational framework for and stimulation of greater efforts to quantify the elements of Systems Effectiveness. This is deemed necessary to serve as an aid to exercising judgment rather than as a replacement for judgment.

To this point Systems Effectiveness has been discussed largely in terms of the military manager's employment of the concept and as expressed by the Navy's approach to the concept. Utilization is not limited to the military manager nor is the Navy approach the only approach. The Air Force has developed an approach through the Air Force Systems Command's (AFSC) Weapons Systems Effectiveness Industrial Advisory Committee (WSEIAC) which does not differ fundamentally from the Navy approach.

The conceptual models developed by AFSC and by the Navy do provide management tools for industry as well as the military. With these tools, industry can present their case for the system design which they espouse. Further top management in industry is in a better position to appraise their own firm's effort and, through common use of the tools, can understand better the military decision process. Debriefing after a source selection decision can be done in terms of an explicit set of decision points. While the Systems Effectiveness modeling structures do not eliminate disagreements as to the validity of individual value judgments, they do make the value judgments visible so that all parties may understand exactly wherein they disagree.

It should be understood by both the military and industry that the Systems Effectiveness concept imposes a hard discipline on both. Decisions will have to be faced squarely and be explicated. Planning and analysis in depth are mandatory for both. The pay-off, however, is high. Through this discipline military management can obtain not only better decisions but a higher confidence in these decisions. Industry management can obtain similar results within their own management structure and additionally have a visible basis for knowing just where they stand with regard to military management decisions.

Army Tests Cargo Transfer Platform

Adverse shore conditions likely to hinder normal ship-to-shore cargo operations may be a thing of the past if Army tests of an experimental cargo transfer platform, called the Mark IV Ship's Wing, prove successful.

Developed by the U.S. Army Aviation Material Laboratories at Fort Eustis, Va., and currently under study by the U.S. Army General Equipment Test Activity (GETA), Fort Lee, Va., the device is designed to facilitate delivery of cargoes to the beach from vessels at anchor offshore. It can also be used to land troops, transfer casualties and litter cases to hospital ships, for helicopter-messenger service and for other loading and evacuation activities.

By taking to the air, the Army's need for port or beach facilities in landing operations can be reduced. Operations can be continued despite unfavorable tide conditions, rough surf, fouled beaches, mined landing areas, or other obstacles. Use of the platform opens wide possibilities for a two-way route to the landing beach and to more distant inland points.

When the Ship's Wing is in operation, an 8x14-foot winch-operated cargo dolly is positioned on a cantilever girder or wing projecting sufficiently outboard of the ship's rigging and superstructure to permit helicopters to approach the pickup point. The aircraft pluck their individual lifts from the dolly using external sling loading techniques.

The platform can be installed aboard most cargo vessels in less than an hour using regular stevedore labor and the ship's boom. It is 65 feet long and consists of a 40-foot metal girder with a telescoping 25-foot extension. Maximum capacity is 14,000 pounds.

After completion of engineering tests by GETA off Fort Story, Va., the Mark IV Ship's Wing was installed aboard a cargo vessel bound for Korea to continue evaluation. Service tests will be conducted in the Far East by a three-man GETA test team to determine its utility and limitations in field use.

President Johnson Honors Cost Reduction Contributors

President Lyndon B. Johnson presented Certificates of Merit to 17 individuals who have contributed significantly to the Cost Reduction Program of the Department of Defense in a ceremony at the Pentagon July 28.

The awards ceremony was the highlight of Cost Reduction Week (July 26-30) which was observed throughout the Department of Defense in recognition of the efforts of thousands of civilian and military personnel who have contributed to the $4.6 billion in savings achieved in FY 1965 and to focus attention on the actions required to attain the Department goal of saving $6.1 billion annually by FY 1969 and each year there-after.

Attending the ceremony were Secretary of Defense Robert S. McNamara, Assistant Secretary of Defense (Installations and Logistics) Paul R. Ignatius, Secretaries of the Military Departments, members of the Joint Chiefs of Staff and other high ranking civilian and military officials of the Department of Defense.

Among those receiving certificates were a city attorney of Benicia, Calif., cited for his participation in transforming surplus military facilities into productive civilian uses, and a Navy civilian personnel officer, cited for instituting employee placement programs for personnel at installations scheduled for closing.

Those receiving citations were:

Brigadier General Joseph S. Bleymaier, Deputy Commander, Manned Systems, Space Systems Division, Los Angeles, Calif.

Mr. John A. Bohn, City Attorney, Benicia, Calif.

Mr. Robert F. Canny, Supply Commodity Management Officer, Ogden Air Materiel Area, Ogden, Utah.

Mr. Benedict J. Conte, Equipment Specialist, Ogden Air Material Area, Ogden, Utah.

Mr. Charles D. Edmunds, Jr., Quarterman Electronics Mechanic, Pearl Harbor Naval Shipyard, Hawaii.

Mr. Albert G. Gross, Industrial Relations Officer (Civilian Personnel), Naval Research Laboratory, Washington, D.C.

M/Sgt. Leroy Gudgel, Chief, Aircraft Equipment Section, Dover Air Force Base, Delaware.

Mrs. Hazel S. Hanback, Director, Publications Division, Bureau of Yards & Docks, Navy Department, Washington, D.C.

Mr. Harold E. Hoffman, Inventory Management Specialist, Ships Parts Control Center, Mechanicsburg, Pa.

Mr. John A. Bohn, City Attorney, Benicia, Calif., receives Certificate of Merit from President Lyndon B. Johnson as Secretary of Defense Robert S. McNamara and Chairman of the Joint Chief of Staff General Earle G. Wheeler look on. Mr. Bohn was ctied for his contribution to the DOD Cost Reduction Program through his efforts enabling the City of Benicia to transform surplus military facilities of Benicia Arsenal to productive civilian uses.

SP–5 Bernd W. A. Kliem, Mechanical Engineering Assistant, Army Munitions Command, Picatinny Arsenal, N. J.

SFC John L. LaRue, Senior Instructor, USATC Armor, U.S. Training Center, Fort Knox, Ky.

Mr. Morton Memberg, Inventory Management Specialist, Defense Personnel Support Center, Philadelphia, Pa.

Mr. Eugene L. Simpson, General Supply Officer, Army Ammunition Procurement & Supply Agency, Joliet, Ill.

Mr. Gerald Smith, Standardization Specialist, Defense Personnel Support Center, Philadelphia, Pa.

Mr. Robert E. Turner, Equipment Specialist, Ogden Air Materiel Area, Ogden, Utah.

Mr. Adolph A. Wronka, Industrial Engineering Technician, Industrial Service, Department of the Army, Picatinny Arsenal, N. J.

Lt. Raymond W. Youmans, Contracting Officer, Purchasing Division, Naval Ordnance Plant, Louisville, Ky.

Universities to Receive Reactor Fuel Elements

The first transfer of reactor fuel elements to institutions of higher learning will be made by the Defense Department soon when 114 elements are turned over to three universities by the Armed Forces Radiobiology Research Institute (AFRRI), in Bethesda, Md. The transfer is being made under authorization of the U. S. Atomic Energy Commission.

The elements will be used by the schools to expand their radiation research programs, particularly in the area of graduate training in nuclear physics, nuclear engineering and related fields.

The 114 enriched uranium fuel elements have been used at the AFRRI for the past two years. Because of a recent upgrading of the Defense Atomic Support Agency TRIGA reactor (a change from aluminum to stainless steel clad fuel), the aluminum clad elements no longer meet the reactor's operating requirements.

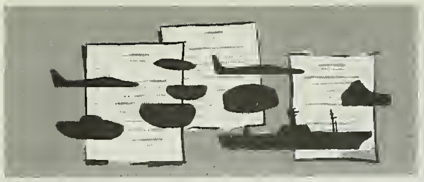
In the past, the disposal procedure for such fuel has been reprocessing or burial along with other radioactive waste materials. However, through action initiated by the AFRRI, it was found that the usefulness of the fuel could be increased by transferring it to universities operating TRIGA-supported research facilities.

Six elements will serve as replacements and spares for steady state and pulse mode operations of the Cornell University TRIGA reactor.

The 52 elements transferred to the University of Illinois will be used in post-graduate studies of neutron pulse propogation through a subcritical multiplying medium. The pulse will be initiated by the Illinois TRIGA reactor and will impinge on the subcritical assembly which will be located in the bulk shielding tank adjoining the TRIGA. This will provide a method of determining reactivity and measuring neutron thermalization parameters. It will also provide information of interest for the theory of coupled reactor systems.

North Carolina State University will use 56 elements to assist in the conversion of its existing MTR-type 10 KW reactor to a TRIGA type reactor suitable for transient radiation studies, neutron activation analysis and radioisotope production. The University's system will then be capable of operating at 100 KW steady state and will enable the reactor to be pulsed from 10 watts to approximately one billion watts in .02 seconds of time.

AFFRI, a command of the Defense Atomic Support Agency, conducts research with the ultimate goal of better understanding the effects of ionizing radiation on biological systems. Its research efforts range from studies at the subcellular level to evaluations of behavior patterns.



DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during month of July 1965:

DEFENSE SUPPLY AGENCY

1—**J. P. Stevens Co.**, New York, N. Y. $1,926,000. 450,000 yards of wool gabardine cloth. Rockingham, N. C. and Milledgeville, Ga. Defense Personnel Support Center, Philadelphia, Pa.

—**Stewart Avionics, Inc.**, Brooklyn, N. Y. $1,037,732. 617 portable floodlight sets. Brooklyn. Defense General Supply Center, Richmond, Va.

—**U. S. Rubber Co.**, Providence, R. I. $2,130,264. 2,648 collapsible fabric fuel tanks. Providence. Defense General Supply Center, Richmond, Va.

6—**DeRossi & Sons Co.**, Vineland, N. J. $1,379,000. 100,000 tropical coats. Vineland. Defense Personnel Support Center, Philadelphia, Pa.

15—**Pacific Mills**, Halifax Va. $2,360,540. 1,037,600 yards of polyester fiber and wool cloth. Raeford, N. C., Halifax and Clarksville, Va. Defense Personnel Support Center, Philadelphia, Pa.

16—**Texaco Inc.**, New York, N. Y. $1,241,352. 15,120,000 gal. Grade JP-4 jet fuel. Defense Fuel Supply Center, Washington, D. C.

19—**Hercules Powder Co.**, Wilmington, Del. $1,501 200. 270,000 gal. of chemicals. Jacksonville, Ark. Defense General Supply Center, Richmond, Va.

20—**Burlington Mills, Inc.**, New York, N. Y. $2,276,423. 1,258,000 cotton sheets. Durham, N. C.; Post and Memphis Tex. Defense Personnel Support Center, Philadelphia, Pa.

23—**J. P. Stevens & Co., Inc.**, New York, N. Y. $1,206,840. 2,000,000 yards of cotton twill cloth. Piedmont and Clemson, S. C. Defense Personnel Center Philadelphia, Pa.

27—**Bata Shoe Co.**, Belcamp, Md. $2,072.913. 225,072 pairs of combat boots. Belcamp. Defense Personnel Support Center, Philadelphia, Pa.

—**Safety First Shoe Co., Inc.**, Nashville, Tenn. $1,600,185. 174,936 pairs of combat hoots. Huntsville, Ala. Defense Personnel Support Center Philadelphia, Pa.

28—**J. P. Stevens & Co., Inc.**, New York, N. Y. $1,440,678. 1,826,668 yards of wind-resistant cotton poplin cloth. Great Falls and Clemson, S. C.: Griffen, Ga.; and Marion, N. C Defense Personnel Support Center, Philadelphia, Pa.

—**B. G. Colton, Raylong Fabrics, Inc.**, New York, N. Y. $1,353,919. 1,578,332 yards of wind-resistant cotton poplin cloth Columbus, Ga. and Rutherfordton and Lexington, N. C. Defense Personnel Support Center, Philadelphia, Pa.

29—**Stanffer Chemical Co.**, New York, N. Y. $2,606,774. 2,224,104 one-quart cans and 83,875 gallons of aircraft turbine engine lubricating oil. Defense Fuel Supply Center, Washington, D. C.

—**Royal Lubricants Co., Inc.**, Hanover, N. J. $2,371,608. 2,224,104 one-ouart cans and 83,875 gallons of aircraft turbine engine lubricating oil. Defense Fuel Supply Center, Washington, D. C.

30—**General Aniline and Film Corp.**, Binghampton, N. Y. $2,642,706. 132,846 packages of X-ray film. Defense Personnel Support Center, Philadelphia, Pa.

ARMY

1 **Union Carbide Corp.**, New York, N. Y. $1,748,250. 450,000 dry batteries for tactical radio sets (AN/TRC-8, 9 and 10). Chemway, N. C. Electronics Command (AMC) Philadelphia, Pa.

Capitol Radio Engineering Institute, Washington, D. C. $1,500,000. Classified services. Silver Spring, Md. Electronics Command (AMC). Fort Monmouth, N. J.

2 **Blount Bros. Corp.** Montgomery, Ala $6,745,000. Modification of NASA SATURN 1B launch complex 37 at Merritt Island, Fla. Canaveral District Corps of Engineers. Merritt Island, Fla.

6 **Telecomputing Services, Inc.**, Panorama City, Calif. $1,300,000. Data reduction services. White Sands Missile Range, N. M. and Holloman AFB, N. M. White Sands Missile Range, N. M.

Del Webb & Norman Engineering Co., Los Angeles, Calif. $5,379,533 Construction of toxic altitude propulsion research facility. Edwards AFB, Calif. Engineer District, Los Angeles, Calif.

—**Smith & Sapp Construction Co.**, Merritt Island, Fla. $1,277,709. Construction of a unified (S) band network communication station. Merritt Island. Canaveral Engineer District, Merritt Island, Fla.

7 **Firestone Tire & Rubber Co.**, Akron, Ohio. $5,669,190. Repair parts for the M 60 tank. Noblesville, Ind. Army Tank Automotive Center (AMC), Warren Mich.

—**Ross Aviation, Inc.**, Fort Rucker, Ala. $1,826,826. Training program in FY 66. Fort Rucker. Purchasing & Contracting Office, Fort Rucker, Ala.

8—**H. L. Coble Construction Co.**, Greensboro, N. C. $3,176,720. Construction of family housing units. Fort Gordon, Ga. Engineer District, Savannah, Ga.

9—**Belock Instrument Corp.**, College Point, N. Y. $1,203,984. Six HAWK simulator Stations. College Point. Army Missile Command, Huntsville, Ala.

—**Elmer G. Wendt, Inc.**, Rio Vista, Calif. $1,153,273. Bank protection in connection with Sacramento River Project. Sacramento. Engineer District, Sacramento, Calif.

12—**National Drug Co.**, Philadelphia Pa. $5,583,300. Continuation of a special project. Swift water, Pa. Army Research and Development Command, Office of the Surgeon General.

13—**Buck & Donohue**, Newark, N. J. $1,037,104. Work on the Smokes Creek Local Flood Protection Project. Near Lakawanna, N. Y. District Corps of Engineers, Buffalo, N. Y.

—**Hardwick Bros. Co.**, Beardstown, Ill. $1,993,159. Work on Chariton River Levees, Missouri. Project. Near Glascow, Mo. District Corps of Engineers, Kansas City, Mo.

14—**Bell Helicopter Co.**, Hurst, Tex. $50,000,000. 255 UH-1B and 465 UH-1D helicopters. Hurst. Army Aviation Command, St. Louis, Mo.

15—**Peter Kiewit Sons Co.**, Vancouver, Wash. $3,929,662. Work on John Day Lock and Dam Project. Arlington, Ore. District Corps of Engineers, Walla Walla. Wash.

16—**Watertown Arsenal**, Watertown, Mass. $6,348,600. 360 M127 mounts for the Howitzer self propelled 155 mm M109 vehicle. Watertown. Project Manager, Combat Vehicles, Army Weapons Command, Rock Island, Ill.

—**Doehler-Jarvis**, National Lead Company, Pottstown, Pa. $1,333,389. 1,769,830 bomb body assemblies. Pottstown. Ammunition Procurement & Supply Agency, Joliet, Ill.

—**Batesville Mfg. Co.**, Batesville, Ark. $1,958,986. 894,830 bomb metal parts. Batesville. Ammunition Procurement & Supply Agency, Joliet, Ill.

—**Honeywell, Inc.**, Hopkins, Minn. $3,309,726. 894,830 bomb metal parts and 1,759,830 bomb body assemblies. New Brighton, Minn. Ammunition Procurement & Supply Agency, Joliet, Ill.

17—**Eureka Willians Co.**, Bloomington, Ill. $1,347,607. Ordnance items. Bloomington. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**General Instrument Corp.**, Chicopee. Mass. $1,200,035. Ordnance Items. Chicopee. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

21—**General Electric Co.**, Pasco, Wash. $6,060,000. 4 KVA generators for the John Day Lock and Dam Project. Schenectady, N. Y. District Corps of Engineers, Walla, Walla, Wash.

—**Jackes-Evans Mfg. Co.**, St. Louis. Mo. $1,143,777. Links for 7.62 mm cartridge belts. St. Louis. Frankford Arsenal (AMC), Philadelphia, Pa

22—**SCM Corp.**, Deerfield, Ill. $1,100,011. Teletypewriter sets and ancillary items. Deerfield. Army Electronics Command (AMC), Philadelphia, Pa.

—**Collins Radio Co.**, Dallas, Tex. $1,200,000. Air-to-ground radio communication sets. Dallas. Procurement Office (AMC), Fort Monmouth, N. J.

23—**Ronlee, Inc.**, Miami, Fla. $3,280,600. Work on Central & Southern Florida Flood Control Project. Martin County, Fla. District Corps of Engineers, Jacksonville, Fla.

—**Reynolds & Smith, Inc.**, Moore Haven, Fla. $1,502,340. Construction and excavation work on Central and Southern Florida Flood Control Project. Glade and Hendry Counties, Fla. District Corps of Engineers, Jacksonville, Fla.

26 **Parke Construction Co.**, Atlanta, Ga. $4,085,590. Construction of 249 family housing units. Fort Jackson, S. C. District Corps of Engineers, Savannah, Ga.

—**Magnavox Co.**, Fort Wayne, Ind. $18,922,425. Radio receivers. Fort Wayne and Urbana, Ill. Army Electronics Command (AMC), Philadelphia, Pa.

—**Booz-Allen Applied Research Inc.**, Chicago, Ill. $1,199,883. FY 66 studies and analyses for a Combined Army Research Office program. Fort Leavenworth, Kan. Los Angeles Procurement District (AMC), Pasadena, Calif.

29—**Green Construction Co. & Winston Bros. Co.**, Seattle, Wash. $7,397,977. Work on Lower Granite Lock and Dam Project. Garfield and Whitman Counties, Wash. District Corps of Engineers, Walla Walla, Wash.

Western Electric Co., Burlington, N. C. $1,663,032. Parts for the NIKE HERCULES missile. Burlington. Army Missile Command (AMC), Huntsville, Ala.

SCM Corp., Deerfield, Ill. $1,139,264. Teletypewriter sets. Army Electronic Command (AMC), Philadelphia, Pa.

30—**Harvey Aluminum Sales, Inc.**, Torrance, Calif. $2,768,742. Classified ammunition. Torrance. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**Thiokol Chemical Corp.**, Bristol, Pa. $3,081,524. Repair parts for PERSHING missiles. Marshall, Tex. Ammunition Procurement and Supply Agency (AMC), Joliet, Ill.

—**I.B.M. Corp.**, Washington, D. C. $4,100,000. Classified electronics equipment Fort Meade, Md. Army Electronics Command (AMC), Fort Meade, Md.

—**Kaiser Jeep Corp.**, Toledo, Ohio. $61,745,592. 10,000 trucks. South Bend, Ind. Army Mobility Command (AMC), Warren Mich.

—**Hupp Corp.** Canton, Ohio. $17,550,000. 10,000 multi-fuel engines for 2½-ton trucks. Canton. Army Mobility Command (AMC), Warren, Mich.

—**General Motors Corp.**, Cleveland, Ohio. $4,240,700. Production engineering, supply and services on the XM551 vehicle. Cleveland. Procurement District (AMC), Cleveland, Ohio.

—**Voron Electronics Corp.**, Philadelphia, Pa. $1,966,188. Radio sets. Philadelphia. Army Electronics Command, Fort Monmouth, N. J.

—**Consolidated Diesel Electric Corp.**, Stamford, Conn. $2,452,320. 195 tractor trucks (less engines, transmissions and axles). Stamford. Army Tank Automotive Center (AMC), Warren, Mich.

Ford Motor Co., Dearborn, Mich. $15,627,990. 7,000 utility trucks. Highland Park, Mich. Army Mobility Command (AMC), Warren Mich.

—**Continental Motors Corp.**, Muskegon, Mich. $3,008,880. 7,000 engines for utility trucks. Muskegon. Army Mobility Command (AMC), Warren, Mich.

—**FMC Corp.**, Charleston, W. Va. $12,322,368. 643 M113 vehicles and spare parts. Charleston. Army Tank Automotive Center (AMC), Warren, Mich.

—**General Electric Co.**, Erie, Pa. $2,305,150. 80-ton meter gauge, electric diesel locomotive. Erie. Army Mobility Command (AMC), Warren, Mich.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $2,188,832. 1,168 radio receiving sets. Cedar Rapids. Army Electronics Command, Philadelphia, Pa.

—**Page Aircraft Maintenance Inc.**, Lawton, Okla. $12,265,837. Maintenance of rotary and fixed-wing aircraft. Fort Rucker, Ala. Contracting Office, Fort Rucker, Ala.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $1,434,440. Automatic direction finder sets. Cedar Rapids. Army Electronics Command, Philadelphia, Pa.

—**Standard Container, Inc.**, Montclair, N. J. $1,352,119. Modification for ammunition boxes. Homersville, Ga. Frankford Arsenal (AMC), Philadelphia, Pa.

NAVY

1—**Otis Elevator Co.**, Stamford, Conn. $1,262,371. Two passive electronic countermeasures (ECM) operator trainers. Stamford. Naval Training Device Center, Port Washington, N. Y.

—**Gibbs & Cox, Inc.**, New York, N. Y. $8,374,706. Design services in connection with amphibious command vessel (AGC-19). New York City. Naval Shipyard, Philadelphia, Pa.

—**Western Electric Co., Inc.**, New York, N. Y. $2,373,556. Shipboard weapon control equipment for TARTAR missiles. Burlington. N. C. Bureau of Naval Weapons.

—**Curtiss-Wright Corp.**, Wood-Ridge, N. J. $1,498,159. Engineering services for J-65 aircraft engines. Wood-Ridge. Bureau of Naval Weapons.

—**Babcock Electronics Corp.**, Costa Mesa, Calif. $1,440,000. Prototype models of shore-based transmitters. Costa Mesa. Bureau of Naval Weapons.

—**RCA**, Camden, N. J. $6,507,469. Tropospheric scatter communications systems. Camden. Bureau of Ships.

—**Hughes Aircraft Co.**, Fullerton, Calif. $3,352,735. Shipboard satellite communications sets with associated equipment. Fullerton. Bureau of Ships.

—**Vickers, Inc.**, St. Louis, Mo. $1,486,830. Automatic shipboard degaussing (magnetic reduction) systems. St. Louis. Bureau of Ships.

Westinghouse Electric Corp., Pittsburgh, Pa. $3,288,300. Design and furnishing of reactor plant components for nuclear powered ships. Pittsburgh. Bureau of Ships.

—**Control Data Corp.**, Minneapolis, Minn. $1,122,732. One data processing set and associated equipment. Minneapolis. Bureau of Ships.

—**Douglas Aircraft Co. Inc.**, Long Beach, Calif. $2,073,387. Bomb rack and bomb hoist adapters. Torrance, Calif. Bureau of Naval Weapons.

—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $30,609,986. Tactical engineering services on POLARIS missile system. Sunnyvale. Special Projects Office.

2—**Raytheon Co.**, Lexington, Mass. $9,222,152. Missile guidance systems for F-4B and F4C aircraft. Waltham, Mass. and Bristol. Tenn. Bureau of Naval Weapons.

—**William E. Arnold Co.**, Jacksonville, Fla. $2,268,300. Construction of an aircraft maintenance hanger. NAS, Cecil Field, Fla. Director, Southeast Div., Bureau of Yards and Docks.

—**Howard Research Corp.**, Arlington, Va. $1,784,000. Engineering and support services of Fleet Ballistic Missile training installations. Arlington. Special Projects Office.

General Electric Co., Pittsfield, Mass. $2,635,361. Logistics and engineering support services for POLARIS MK 80 fire control system. Pittsfield. Special Projects Office.

—**Honeywell Inc.**, St. Petersburg, Fla. $3,858,055. Repair of POLARIS components. St. Petersburg. Special Projects Office.

—**Vitro Corp. of America**, Silver Spring, Md. $15,929,496. Engineering service on POLARIS fleet ballistic missile weapons system. Silver Spring. Special Projects Office.

—**International Telephone & Telegraph Corp.**, Nutley, N. J. $5,296,105. Furnish, install and checkout an underwater tracking control system. Underwater Tactical Range off Kauai, Hawaii. Bureau of Naval Weapons.

—**National Co., Inc.**, Melrose, Mass. $2,815,381. Shipboard radio receiving sets. Melrose. Bureau of Ships.

—**American Bosch Arma Corp.**, Philadelphia, Pa. $1,666,262. Weapons control switching equipment for installation aboard naval surface ships. Philadelphia. Bureau of Ships.

—**Sperry Rand Corp.**, Long Island City, N. Y. $9,758,280. Shipboard gun fire control system components and related equipment. Long Island City. Bureau of Naval Weapons.

—**Ryan Aeronautical Co.**, San Diego, Calif. $1,034,955. FIREBEE target drones. San Diego. Bureau of Naval Weapons.

—**Thiokol Chemical Corp.**, Denville, N. J. $10,577,000. Rocket engines. Lake Denmark, N. J. Bureau of Naval Weapons.

—**Sparton Corp.**, Jackson, Mich. $5,108,427. Sonobuoys. Jackson. Bureau of Naval Weapons.

—**Collins Radio Co.**, Cedar Rapids, Iowa. $10,294,504. Communication-navigation-identification systems for Navy and Air Force aircraft. Cedar Rapids. Bureau of Naval Weapons.

—**Texas City Refining Co.**, Texas City, Tex. $3,700,000. Two year charter of the SS THE CABINS for use in carrying petroleum products. Military Sea Transportation Service.

—**Charles Kurz and Co., Inc.**, Philadelphia, Pa. $8,000,000. Use of the SS FORT FETTERMAN for five years to carry petroleum products. Military Sea Transportation Service.

6—**Lockheed Missiles & Space Co.**, Sunnyvale, Calif. $12,395,020. Engineering and logistic support for the POLARIS missile. Sunnyvale. Special Projects Office.

—**Aero Corp.**, Lake City, Fla. $1,397,550. Progressive maintenance including component overhaul of C-54 aircraft. Lake City. Bureau of Naval Weapons.

—**Douglas Aircraft Co., Inc.**, Long Beach, Calif. $1,120,606. Bomb release rack system for Navy aircraft. Long Beach. Bureau of Naval Weapons.

—**Chromcraft Corp.**, St. Louis, Mo. $8,480,697. MIGHTY MOUSE rocket launchers for the Navy and Air Force. St. Louis. Bureau of Naval Weapons.

7—**Sperry Rand Corp.**, Syosset, Long Island, N. Y. $4,423,000. Repair of navigation systems and subsystems. Syosset. Bureau of Ships.

—**Fairchild Hiller Corp.**, St. Augustine, Fla. $3,193,985. Overhaul, including components, of P-5 MARLIN aircraft. St. Augustine. Bureau of Naval Weapons.

—**Minneapolis Honeywell, Inc.**, Hopkins, Minn. $9,934,074. Mark 46 torpedoes. Hopkins. Bureau of Naval Weapons.

—North American Aviation, Inc., Anaheim, Calif. $1,753,000. Repair of gyroscopes on Ship Inertial Navigation System equipment. Anaheim. Bureau of Ships.

—**North American Aviation, Inc.**, Anaheim, Calif. $3,265,000. Repair of Ship Inertial Navigation System equipment. Anaheim. Bureau of Ships.

8—**Sperry Rand Corp.**, Syosset, Long Island, N. Y. $7,170,000. Engineering and data processing services for FY 66 POLARIS technical assistance program. Bureau of Ships.

—**North American Aviation, Inc.**, Anaheim, Calif. $1,427,000. To conduct a study and test program of Ship Inertial Navigation System equipment. Anaheim. Bureau of Ships.

—**Western Electric Co., Inc.**, New York, N. Y. $1,080,000. Modification kits for shipboard gun fire control systems. Burlington, N. C. Bureau of Naval Weapons.

—**Hughes Aircraft Co.**, Culver City, Calif. $17,000,000. PHOENIX missile systems after design completion. Culver City. Bureau of Naval Weapons.

9—**Amcel Propulsion**, Asheville, N. C. $1,942,875. MK 24 parachute flares. Swannanoa, N. C. Navy Ships Parts Control Center, Mechanicsburg, Pa.

—**General Dynamics**, Pomona, Calif. $23,800,000. FY 66 funding for pilot production of the medium range standardization missile. Pomona. Bureau of Naval Weapons.

—**Northwestern Marine Iron Works**, Portland, Ore. $8,493,656. Construction of two oceanographic research ships. Swan Island, Portland. Bureau of Ships.

—**General Electric**, Pittsfield, Mass. $1,163,121. Research and development on POLARIS fire control and guidance systems. Pittsfield. Special Projects Office.

12—**Alcoa Aluminum of America**, Pittsburgh, Pa. $1,095,990. Mat extrusions for AM-2 type airfield landing mats. Lafayette, Ind. Naval Air Engineering Center, Philadelphia, Pa.

—**ITT Gilfillan, Inc.**, Los Angeles, Calif. $2,570,400. Design, development, fabrication and testing of a micro-miniaturized data programmer unit for use on radar equipment. Azusa, Calif. Bureau of Ships.

13—**Pratt & Whitney Aircraft (United Aircraft Corp.)**, East Hartford, Conn. $1,785,042. Miscellaneous spare parts for P2V5 and P2V7 aircraft engines. East Hartford. Navy Aviation Supply Office, Philadelphia, Pa.

—**Farmers Tool & Supply Co.**, Denver, Colo. $2,775,114. Wings and rolleron assemblies for sidewinder 1-C missiles. Denver. Naval Propellant Plant, Indian Head, Md.

—**Lear Siegler, Inc.**, Grand Rapids, Mich. $1,104,058. Bomb computer systems for Navy aircraft. Grand Rapids. Bureau of Naval Weapons.

15 **Loral Electronics Systems**, Bronx, N. Y. $3,960,166. Components for doppler navigation radar sets in various production aircraft. Bronx. Navy Purchasing Office, Washington, D. C.

General Electric Co., Seattle, Wash. $2,854,000. Main propulsion turbines for ships. West Lynn, Mass. Puget Sound Naval Shipyard, Bremerton, Wash.

—**Baifield Industries, Inc.**, Carrollton, Tex. $1,454,340. Tow target launchers. Carrollton. Navy Purchasing Office, Washington, D. C.

16—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $4,720,475. Repair of POLARIS hardware. Sunnyvale. Special Projects Office.

Robert L. Guyer Co., Lampasas, Tex. $1,276,900. Conversion, rehabilitation and improvements to housing. Naval Auxillary Air Station, Kingsville, Tex. Director, Gulf Div., Bureau of Yards and Docks.

19 **Boeing Aircraft**, Morton, Pa. $6,971,159. Components for rotor blades and transmissions for helicopters. Morton. Bureau of Supplies and Accounts.

—**Chromcraft Corp.**, St. Louis, Mo. $2,009,400. MIGHTY MOUSE rocket launchers. St. Louis. Bureau of Naval Weapons.

—**Ling-Temco-Vought, Inc.**, Dallas, Tex. $6,500,000. Conversion of RF-8A aircraft to an RF-8G configuration. Dallas. Bureau of Naval Weapons.

20—**Intercontinental Mfg. Co.**, Garland, Tex. $3,134,746. MK 82 bomb bodies. Garland. Bureau of Supplies and Accounts.

—**Northrop Corp.**, Anaheim, Calif. $1,651,671. Tactical engineering services on POLARIS missile checkout equipment. Anaheim. Special Projects Office.

—**Stanwick Corp.**, Washington, D. C. $2,288,682. Technical services for the development and evaluation of a maintenance data documentation plan for use in repairing shipboard equipment. Norfolk and Arlington, Va. Bureau of Ships.

—**Hayes International Corp.**, Dothan, Ala. $1,052,467. Services and materials to perform progressive maintenance on C-131 and C-118 aircraft. Dothan. Bureau of Naval Weapons.

—**American Machine and Foundry Co.**, York, Pa. $17,026,527. MK-82 bomb bodies. York. Bureau of Supplies and Accounts.

—**Newport News Shipbuilding and Dry Dock Co.**, Newport News, Va. $1,920,000. Design of a nuclear powered aircraft carrier, Newport News. Bureau of Ships.

—**General Dynamics Corp.**, Groton, Conn. $1,502,531. Ball valves for nuclear submarines. Groton and Montreal, Canada. Naval Supply Center, Oakland, Calif.

21—**Grumman Aircraft Engineering Corp.**, Bethpage, L. I., N. Y. $4,516,500. Research and development of the integrated ECM system for EA–6B aircraft. Bethpage. Bureau of Naval Weapons.

—**United Aircraft Corp., Pratt and Whitney**, East Harford, Conn. $6,700,000. Continue development of TF–30 engines and components. East Harford. Bureau of Naval Weapons.

22—**Motorola, Inc.** Scottsdale, Ariz. $2,056,955. Guidance and Control systems for SIDEWINDER missiles. Scottsdale. Bureau of Naval Weapons.

—**Admiral Corp.**, Chicago, Ill. $4,068,212. Ultra high frequency radio sets for use in Navy and Army aircraft. Chicago. Navy Purchasing Office, Washington, D. C.

—**North American Aviation, Inc.**, Anaheim, Calif. $4,892,031. Ship Inertial Navigation Systems and associated equipment. Anaheim. Bureau of Ships.

23—**Northrop Corp.**, Anaheim, Calif. $1,128,707. Classified logistic and engineering services for POLARIS. Anaheim. Specail Projects Office.

26—**Curtiss-Wright Corp.**, Wood-Ridge, N. J. $2,595,152. Spare parts for Air Force R–1820 engines. Wood-Ridge. Navy Aviation Supply Office. Philadelphia, Pa.

—**Sperry Rand Corp.**, Syosset, L. I., N. Y. $1,601,750. Fabrication, testing, furnishing and installation of Ship Inertial Navigation System test sets at the Module Maintenance Facility. Charleston, S. C. Bureau of Ships.

—**Arthur D. Little, Inc.**, Cambridge, Mass. $1,766,600. Research and development program to develop ship working plans utilizing a computer plotter technique. Cambridge. Bureau of Ships.

—**Curtiss-Wright Corp.**, Wood-Ridge, N. J. $3,351,803. Aircraft engine spare parts. Wood-Ridge. Navy Aviation Supply Office. Philadelphia, Pa.

27—**General Dynamics Corp.**, Groton, Conn. $40,568,975. Overhaul and A–3 POLARIS missile retrofit of USS THEODORE ROOSEVELT (SSBN–600) and USS ABRAHAM LINCOLN (SSBN–602), Groton. Bureau of Ships.

28—**Curtiss-Wright Corp.**, Wood-Ridge, N. J. $1,460,932. Spare parts for the R–1820 and R–3350 aircraft engine. Wood-Ridge. Navy Aviation Supply Office, Philadelphia, Pa.

29—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $7,000,000 and $7,358,645. Research and development on POLARIS re-entry system; Flight tests of the MK–12 re-entry vehicle in a POLARIS environment. Sunnyvale. Special Projects Office.

30—**Jay De Construction Co., Inc.**, Apple Valley, Calif. $1,230,000. Rehabilitation and conversion of housing. Marine Corps Supply Center, Barstow, Calif. Director, Southwest Div., Bureau of Yards and Docks.

—**Treadwell Corp.**, New York, N. Y. $1,693,216. Oxygen generators for submarines. New York City. Bureau of Ships.

—**Curtiss-Wright Corp.**, Wood-Ridge, N. J. $2,268,683. Spare parts for J65–W–16A and J65–W–18A jet engines for A4A and A4B aircraft. Wood-Ridge. Navy Aviation Supply Center, Philadelphia, Pa.

—**Western Electric Co.**, New York, N. Y. $1,838,857. Oceanographic research. Whippany, N. J. Navy Purchasing Office, Washington, D. C.

AIR FORCE

1—**Boeing Co.**, Seattle, Wash. $3,728,410. Engineering Services in support of the MINUTEMAN weapon system. Seattle. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Bendix Corp.**, Oxnard, Calif. $3,126,145. Operation and Maintenance of Western Test Range communications center. Wheeler AFB, Hawaii and Eniwetok. Air Force Test Range (AFSC), Vandenberg AFB, Calif.

—**Air International**, Miami, Fla. $1,378 414. Inspection and repair of C–147 aircraft. Miami. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Lockheed Aircraft Corp.**, Ontario, Calif. $13,600,000. FY 66 maintenance services for F–104G aircraft. Luke AFB, Ariz. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**RCA**, Camden, N. J. $27,200,000. Material and services for operation of Ballistics Missile Early Warning System. Thule AFB, Greenland, and Clear Missile Early Warning Site, Alaska. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Pan American World Airways, Inc.**, New York, N. Y. $10,000,000. Management operation and maintenance services. Eastern Test Range (AFSC), Patrick AFB, Fla.

—**North American Aviation, Inc.**, Anaheim, Calif. $2,001,135. FY 66 engineering services in support of MINUTEMAN weapon system. Anaheim. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**North American Aviation Inc.**, Anaheim Calif. $10,000,000. Design and development of a post boost control system as part of the MINUTEMAN ICBM program. Anaheim. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

2—**Western Electric Co., Inc.**, New York, N. Y. $3,590,000. Implementation, testing and related services for the back up interceptor control system (BUIC). New York City. Electronics Systems Div. (AFSC), L. G. Hanscom Field, Mass.

—**Boeing Co.**, Morton, Pa. $1,260,000. Engineering services for CH–47 helicopters. Morton. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**AVCO Corp.**, Wilmington, Mass. $1,700,047. Work on a classified project. Wilmington. Ballistic Systems Div. (AFSC), Norton AFB. Calif.

6—**Marquardt Corp.**, Van Nuys, Calif. $2,000,000. Supersonic RAMJET flight test program. Van Nuys. Systems Engineering Group (AFSC), Wright-Patterson AFB, Ohio.

—**Tele-Signal Corp.**, Hicksville, N. Y. $1,470,000. Air-ground communications equipment. Hicksville. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**General Precision, Inc.** Hillcrest, Binghampton, N. Y. $1,635,359. Depot maintenance and repair of flight simulators. Binghampton. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**General Dynamics**, San Diego, Calif. $1,391,721. Production of orbital vehicles and related equipment. San Diego. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Kollsman Instrument Corp.**, Elmhurst, N. Y. $1,350,202. Procurement if spare parts for mapping and survey systems. Elmhurst. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Aerospace Corp.**, El Segundo, Calif. $4,046,000. General systems engineering and technical direction of ballistic missile and space programs. El Segundo. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Giddings & Lewis Machine Tool Co.**, Fond du Lac, Wis. $2,539,600. Machine tools. Fond du Lac. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Union Carbide Corp.**, Parma, Ohio. $2,600,000. Development of a technical training program to include training materials. Parma. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Teledyne, Inc.**, Gardena, Calif. $1,169,218. Production of hydraulic test stands in support of F–4C aircraft after completion by formal advertising. Gardena. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

7—**Federal Electric Corp.**, Paramus, N. J. $24,839,500. Maintenance and operation of the Defense Early Warning System. Canada, Alaska and Greenland. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Douglas Aircraft Co., Inc.**, Santa Monica, Calif. $1,260,000. GENIE rocket motors. Sacramento, Calif. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**General Precision, Inc.**, Glendale, Calif. $1,270,000. Data processing programming services. Glendale. Electronics Systems Div. (AFSC), L. G. Hanscom Field. Mass.

8—**Collins Radio Co.**, Richardson, Tex. $1 468,610. Production of transportable communications systems. Richardson. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Boeing Co.**, Wichita, Kan. $3,200,000. FY 66 B–52 engineering flight test program. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**General Electric Co.**, Syracuse, N. Y. $8,530,750. Operation, maintenance and logistics support of space track facilities. Shemya, Alaska and Diyarbikar, Turkey. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Garrett Corp.**, Phoenix, Ariz. $1,196,341. Modification kits for overhaul of aircraft starters. Phoenix. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**RCA**, Moorestown, N. J. $2,570,450. Operation, maintenance and logistics support of a space track facility. Moorestown. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

—**Bendix Corp.**, Baltimore, Md. $1,485,803. Communications equipment, spare parts and technical data. Baltimore. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

9—**Lockheed Aircraft Service Co.**, Jamaica, N. Y. $2,826,000. Modification and maintenance of EC–121 aircraft. Jamaica. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

13—**Raytheon Co.**, Bedford, Mass. $1,271,324. Operation and maintenance of Rampart Radar System, Holloman AFB, N. M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

—**Continental Electronics Mfg. Co.**, Dallas, Tex. $1,536,302. Operation and maintenance of two UHF radar sites. Holloman AFB, N. M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

—**General Dynamics**, Fort Worth, Tex. $1,340,371. Operation and maintenance of radar target scatter site. Holloman AFB, N. M. Air Force Missile Development Center (AFSC), Holloman AFB, N. M.

—**Douglas Aircraft Co.**, Tulsa, Okla. $11,354,185. Modification and maintenance of B–52 aircraft. Tulsa. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**RCA Service Co.**, Camden, N. J. $12,365,742. Operation and maintenance of White Alice Communication System. Anchorage, Alaska. Sacramento Air Materiel Area (AFLC), McClellan AFB, Calif.

14—**Ling-Temco-Vought, Inc.**, Greenville, Tex. $1,822,751. Inspection and repair of C–124 aircraft. Greenville. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Hayes International Corp.**, Birmingham, Ala. $4,005,935. Inspection and repair of C–124 aircraft. Birmingham. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Hayes International Corp.**, Birmingham, Ala. $3,299,826. Inspection and repair of C–97 and KC–97 aircraft. Birmingham. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Raytheon Co.**, Santa Barbara, Calif. $2,874,265. Airborne Electronic Equipment. Santa Barbara. Warner-Robins Air Materiel Area, Robins AFB, Ga.

15—**Onsrud Machine Works, Inc.**, Niles, Ill. $2,287,160. 4 heavy milling machines. Niles. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

16—**IBM Corp.**, Washington, D. C. $1,639,304. Electronic data processing equipment. Poughkeepsie, N. Y. 2750th Air Base Wing, Wright-Patterson AFB, Ohio.

—**North American Aviation, Inc.**, Anaheim, Calif. $9,000,000. Production of guidance and control systems for MINUTEMAN II. Anaheim. Headquarters, Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Martin-Marietta Corp.**, Orlando, Fla. $1,033,000. Production of communications equipment for support of F–111, F–4 and A6A aircraft. Orlando. Aeornautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

19—**Boeing Co.**, Wichita, Kan. $3,566,050. Kits for modification of B–52 aircraft equipment. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**I.T.&T. Technical Services, Inc.**, Paramus, N. J. $1,200,000. Operation and maintenance at Air Force Plant #42 for FY 66. Palmdale, Calif. San Bernardino Air Materiel Area (AFLC), Norton AFB, Calif.

21—**American Machine & Foundry Co.**, York, Pa. $1,680,889. Production of aircraft arresting barriers. York. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**Martin Marietta Corp.**, Denver, Colo. $4,775,000. Supplies and services to support the TITAN II long-term readiness and environmental program. Denver. San Bernardino Air Materiel Area (AFLC), Norton AFB, Calif.

22—**Boeing Co.**, Wichita, Kan. $2,000,000. Work on B-52 aircraft. Wichita. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

—**Atlantic Research Corp.**, Alexandria, Va. $2,419,000. Production of meterological sounding rockets and related equipment. Gainesvile and Alexandria, Va. Ogden Air Materiel Area (AFLC), Hill AFB, Utah.

—**Hayes International Corp.**, Birmingham, Ala. $1,419,705. Inspection and repair of C–118 aircraft. Dothan, Ala. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

23—**Lockheed Aircraft Corp.**, Marietta, Ga. $1,560,970. Power plant assemblies for C–130 and HC–130 aircraft. Chula Vista, Calif. Warner_Robins Air Materiel Area (AFLC), Robins AFB, Ga.

—**Aerojet-General Corp.**, Azusa, Calif. $2,000,000. Design, manufacture and provision of radiometric equipment. Azusa. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Hoffman Electronics Corp.**, El Monte, Calif. $1,358,500. Production of communication equipment for F–5, T–39 and CH–3C aircraft. El Monte Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

26—**United Aircraft Corp.**, East Hartford, Conn. $1,125,000. Development work on engines for C–5A aircraft. East Hartford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Goodyear Aerospace Corp.**, Akron, Ohio. $2,216,814. Production of tactical reconnaissance processing and interpretation equipment Akron. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $1,450,000. Development work on engines for C–5A aircraft. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Philadelphia, Pa. $6,600,000. Research and development of the Mark 12 re-entry program. Philadelphia. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

27—**Boeing Co.**, Seattle, Wash. $2,851,000. Modification of early MINUTEMAN missiles. Rapid City, S. D. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Philco Corp.**, Willow Grove, Pa. $1,692,384. Procurement of electronic data processing systems. 2750th Air Base Wing (AFLC), Wright-Patterson AFB, Calif.

—**Sperry Rand Corp.**, St. Paul, Minn. $1,000,000. Development of digital computers for airborne guidance systems. St. Paul. Ballistic Systems Div. (AFLC), Norton AFB, Calif.

28—**LTV Electrosystems, Inc.**, Greenville, Tex. $2,563,641. Inspection and repair of F–102 series aircraft. Greenville, S. C. San Antonio Air Materiel Area (AFLC), Kelly AFB, Tex.

—**General Electric Co.**, West Lynn, Mass. $2,496,000. Aircraft engines, spare parts and related ground equipment. West Lynn. Aeronautiacl Systems Div. (AFSC), Wright_Patterson AFB, Ohio.

—**Battelle Memorial Institute**, Columbus, Ohio. $2,420,000. Classified program work. Columbus. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

29—**Garrett Corp.**, Phoenix, Ariz. $3,410,025. Modification kits used in the overhaul of aircraft starters. Phoenix. Oklahoma City Air Materiel Area (AFLC), Tinker AFB, Okla.

30—**AVCO Corp.**, Stratford, Conn. $45,214,944. Production of T–53 series engines for Army aircraft. Stratford. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**General Electric Co.**, Cincinnati, Ohio. $2,519,175. Design of lightweight lift engines. Cincinnati. Aeronautical Systems Div. (AFSC), Wright-Patterson AFB, Ohio.

—**Boeing Co.**, Seattle, Wash. $6,500,000. Design, development and test of missile trajectory prediction systems and related equipment. Seattle. Ballistic Systems Div. (AFSC), Norton AFB, Calif.

—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. $6,510,349. Research and development work on a space program. Sunnyvale. Space Systems Div. (AFSC), Los Angeles, Calif.

—**Hayes International Corp.**, Birmingham, Ala. $1,797,000. Inspection and repair as necessary of C–130 aircraft. Warner-Robins Air Materiel Area (AFLC), Robins AFB, Ga.

Army To Get New Diving Equipment

Two new diving sets are being type classified for military procurement by the U.S. Army Materiel Command Engineer Research and Development Laboratories, Fort Belvoir, Va.

The new diving sets are self-contained, open and closed circuit units, composed of commercially available components and will fill immediate requirements of the Army Special Forces.

The open circuit set operates to depths of more than 200 feet and eliminates the depth limitation and inherent dangers involved in oxygen-rebreathing SCUBA operations.

The closed circuit set operates at a depth of 25 feet but is valuable because it does not cause tell-tale surface bubbles.

Future Army procurement of diving equipment will depend on results of studies now being conducted to determine complete needs.

Mauler Program Terminated

The Department of the Army is terminating its development program for the Mauler, which was to serve as a mobile air defense missile system for the protection of front line troops against high speed enemy aircraft and short range missiles and rockets.

Technical difficulties associated with mounting a fire control radar and guided missile launcher on the same vehicle caused significant delays and increased costs. Development costs to complete Mauler would have been in excess of $180 million.

As a result of problems encountered, extensive re-evaluation of Mauler was completed in the spring. This re-evaluation, taking into account recent improvements in the Hawk missile system and the promise of new types of forward area defense systems significantly simpler and cheaper than Mauler, led the Army to question the wisdom of continuing the development of Mauler to deployment. The new systems involve combinations of automatic guns and the Chaparral (Sidewinder missiles mounted on a self-propelled vehicle).

Thus, although the technical feasibility of the Mauler system has now been established, the Army has decided to select the alternative systems for deployment.

Effort under the present Mauler contract will be completed prior to Sept. 30, 1965. Studies are under way to determine what continued development of Mauler components may be of value to the U.S. or allied nations. Such elements as the infrared acquisition unit, acquisition radar and Mauler fuse show promise for such use. In addition, technology and miniaturization techniques developed during the Mauler program will be valuable in developing future compact air defense weapons systems.

General Dynamics Corporation, at Pomona, Calif., has been the prime contractor for the Mauler.

Improved Surveillance System Proposed for Ryukyus

The Air Force has revealed that an airspace surveillance and weapons control system, similar in function to one being used in West Germany, is proposed for installation in the Ryukyu Islands, southwest of Japan.

Through the use of semi-automatic data processing, the Ryukyus Air Defense System (RADS) will pick up airspace intruders in its area almost instantly, strengthening considerably the defense capabilities of the U.S. Air Force in that area.

The system will consist of radar, ultra-fast communications, data processors, display consoles and command posts where decision makers can direct manned or unmanned weapon interception. Returning aircraft can be directed home or to alternate bases through use of the system.

Although the Air Force has not yet specified the system's equipment, it has emphasized that "off the shelf" engineering techniques and component items be used rather than have the system based on new research and development. The finished system will have to meet maintenance and performance criteria and be within an acceptable cost range.

Contractors will study Air Force goals for the projected system's performance, prepare design plans and select hardware they consider necessary to perform required functions.

The Air Force Systems Command's Electronic Systems Division, Hanscom Field, Mass., is handling acquisitions for RADS.

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SYNCOM Communications Satellites Transferred to DOD

Control of SYNCOM II and SYNCOM III communications satellites has been transferred from the National Aeronautics and Space Administration (NASA) to the Department of Defense with specific assignments given to the Air Force and the Army and support activities assigned to the Navy.

Last December Secretary of Defense Robert S. McNamara directed the Defense Communications Agency (DCA) to implement a memorandum of understanding between DOD and NASA after the civilian space agency reported it had completed experimental research and development activities with the two synchronous satellites.

Three telemetry and command stations for support of SYNCOM will be operated by the Air Force. These stations are located in the Seychelle Islands (Indian Ocean), Hawaii and Guam, and will maintain precision control and positioning of the satellites.

The Army will be responsible for the earth communications facilities that are used with the SYNCOM satellites except for two shipboard terminals operated by the Navy. The Army Satellite Communications Agency will continue to conduct communication testing. The Army's Strategic Communications Command will man and operate all ground terminals.

The earth complex is composed of a fixed station at Camp Roberts, Calif.; transportable stations at Hawaii; Clark Air Base, Republic of the Philippines; Asmara, Eritrea; and two transportable stations located in Southeast Asia.

The facilities will be under the direction of the Defense Communications Agency.

The USNS Kingsport, a shipboard communication terminal, is presently employed to support technical tests conducted via the SYNCOM satellites.

Test traffic, both voice and teletype, has been passed successfully between all stations.

SYNCOM III, launched Aug. 19, 1964, will be maintained at a position between 170° and 174° East longitude and SYNCOM II, launched July 26, 1963, will drift between 65° and 80° East Longitude. Both are in orbit at an altitude of about 22,300 miles.

NASA will continue to receive reports on the telemetry from the two satellites from DOD and will continuously evaluate their performance in space.

Technical Data Study Contract Awarded

The Defense Supply Agency has awarded a $168,000 contract to North American Aviation, Inc., to determine how scientists and engineers acquire and use technical data in the nation's industrial research and development laboratories.

The study is being conducted by DOD to increase the Department's capabilities to serve the Government, as well as the scientific and industrial communities. The new study supplements a similar in-house study recently completed which was designed to determine how DOD scientists and engineers use technical information.

North American's Space and Information Systems Division, at Downey, Calif., will conduct the nationwide six-month survey. The Office of the Director of Technical Information, Office of the Director of Defense Research and Engineering, and the Advanced Research Projects Agency will administer the survey. The Defense Documentation Center will monitor it.

Approximately 100 selected industrial installations throughout the country will be visited for the purpose of interviewing research, development, test and evaluation scientists and engineers. The National Security Industrial Association assisted DOD in selecting the installations to be visited.